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Original Articles.

RECENT INVESTIGATIONS BEARING ON INFECTIOUS DISEASES OF UNKNOWN ETIOLOGY.

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There is a number of transmissible diseases, both human and animal, some of them exquisitely contagious, the causes of which are still unknown, notwithstanding the most careful search. Of the human diseases belonging to this group I would mention especially scarlet fever, measles, chicken-pox, yellow fever, typhus fever and hydrophobia. Smallpox and vaccinia may also be left here for the present. Of the animal diseases of this group the most important are foot and mouth diseases, peripneumonia, bovine pest, sheep-pox (clavelée), chicken-typhus or chicken-pest, "horse sickness" and epithelioma contagiosum of fowls. The "mosaic disease" of the tobacco plant ("Mosaik oder Fleckenkrankheit des Tabaks") may be given as an example of a contagious plant disease of unknown etiology.

THE INFECTIOUS NATURE OF THE DISEASES DISCUSSED.

In discussing the probable nature of diseases of this kind perhaps the first question to arise will be, "What evidence is there that they are caused by living, infectious organisms?"

In the first place, the demonstration that many of the diseases mentioned may be inoculated successively from animal to animal indicates that it concerns living virus capable of reproduction, and that the diseases in question are true infections, and not intoxications. There are few known poisons, indeed, of such virulency that intoxication is produced by transferring small quantities of the organs or fluids of a poisoned animal to a healthy animal. White mice may be inoculated with tetanus by injecting into the peritoneal cavity a small quantity of the blood of a horse or of a human being suffering with tetanus, but it is not possible to produce tetanus in a progressive series by inoculating other mice with the blood or tissue of mouse No. 1. Now, the toxin of tetanus is one of the most powerful yet known. In 1893 Nicolas[1] reported the production of human tetanus by the accidental inoculation of a small quantity of tetanus toxin. This occurred on a much larger scale in St. Louis, and Bolton, Fisch and Malden[2] found that the serum of a horse in the period of incubation preceding tetanus may contain enough tetano-toxin to produce fatal tetanus in children when injected in the quantities contained in curative antidiphtheria serum. Bolton and Fisch[3] found no free tetano-toxin, however, in the blood, spinal fluid and other tissues of the children so infected with tetanus. They also showed that in horses the development of tetanic symptoms coincides with the disappearance of toxin from the blood. There is no evidence whatever that a purely toxic disease like this can spread directly from patient to patient in the manner characteristic of most of the diseases just mentioned.

Perhaps the most striking experiment showing the inoculability of an infectious disease of unknown etiology is that of Loeffler and Frosch[4] with the filtered contents of the vesicles in foot and mouth disease of cattle: .02 c.cm. of this fluid, freed from visible bacteria and cells by filtration, were injected into animal No. 1, which became sick in a typical manner; the same quantity of similar material similarly treated was transferred from animal No. 1 to animal No. 2, in which there was again produced the same disease; this was carried on successively from animal to animal through a series of six members. Loeffler and Frosch estimate that the sixth animal received less than a two-billionth part of the original quantity of lymph. Inasmuch as .000002 c.cm. of the fresh lymph is not infectious, the only explanation that can be offered in this case is that the virus or cause of foot and mouth disease is a living one capable of proliferation.

Similar experiments, but on a smaller scale, by König indicate that the "mosaic disease" of the tobacco plant is caused by a living, reproducing, infectious agent.

The facts observed in connection with variolation and vaccination, and the spontaneous communicability of smallpox, leave little room for the conception of any other etiologic agent than a living one capable, under favorable conditions, of rapid multiplication. The fact that the quantity of pus was of no import in securing the development of good pustules in smallpox inoculation was used by Linnæus in the middle of the eighteenth century as evidence in favor of his theory that contagious diseases are caused by "animalcula infinite parva." Wasielewsky secured active vaccine material after successive inoculations from cornea to cornea of no less than forty-six rabbits—a result that certainly indicates multiplication of the virus at the points of inoculation.

In the case of scarlet fever, measles, syphilis, typhus fever and yellow fever, peculiar difficulties present themselves to experimental investigation because of the lack of susceptible animals, but the pronounced contagiousness of nearly every one of these diseases leaves no room to doubt their infectious nature. And in the case of yellow fever the epochal investigations of Reed, Carroll

1. Compt. rend de la Soc. de Biol., 1893, v, 844-846.
2. St. Louis Med. Review, Nov. 23, 1901,
3. Trans. Am. Asso. of Phys., 1902, xvii, 462-467.
4. Centralbl. f. Bakt., 1898, xxiii, 371-391.

and Agramonte have shown that the cause of the disease occurs in the blood, whence it is conveyed to susceptible persons by the blood-sucking mosquito, *Stegomyia fasciata*.

Is there any evidence that transmissible diseases are caused by enzymes? Now it has been suggested that some of these diseases may be caused by enzymes that act catalytically, and not by virtue of any toxicity of their own. We can understand how enzymes might cause epidemic-like diseases after the manner of certain intoxications of exotic origin, and further, that enzymes may play an essential rôle in the pathogenesis of the diseases, but there is, after all, no evidence at hand that enzymes alone, entirely independently of living organisms as their source, can cause transmissible diseases, like measles, foot and mouth disease and yellow fever.*

As yet we are hardly prepared to receive the hypothesis that certain contagious and communicable diseases are caused by enzymes or other substances that are not directly traceable to living matter—the theory of the contagium vivum has proven itself too heuristic to be abandoned lightly in favor of another hypothesis without analogy and so far insusceptible of demonstration. After all, the continuous metabolism and the power of reproduction characteristic of living matter explain most satisfactorily at present the nature of the causes of the transmissible diseases like these now discussed.

WHAT, THEN, MAY BE SOME OF THE REASONS THAT THE ORGANISMS OF THESE DISEASES HAVE NOT BEEN DISCOVERED?

1. *Incultivability.*—Perhaps the most generally accepted explanation offered of the failure to secure artificial cultures of the organisms that we may suppose cause the diseases in question is that they are of protozoan causation, because of the failures until very recently to grow protozoa. But there are numerous bacteria that refuse to grow on any of the various culture media now available. The bacillus of leprosy, the spirillum of Obermeyer, and leptothrix may be cited as examples of bacteria of well-known morphology that refuse to grow on our media. And then Novy, before the Section of Pathology and Bacteriology of the New Orleans meeting of the Association, demonstrated successful cultures of rat trypanosoma on agar and defibrinated rabbit's blood, so that it is now clearly shown for the first time that it is possible to cultivate pathogenic protozoa. Hence the failure of artificial culture experiments does not mean much as regards either the nature of a given virus, or as to its absence or presence in a given material. The peculiarities in regard to cultural substratum and other conditions necessary for the growth of the bacillus of tuberculosis, the gonococcus, and the bacillus of influenza serve as illustrations of the ingenuity required in order to meet the wants of many pathogenic bacteria. Now it may be that the microbes of measles and the other diseases mentioned are obligate parasites in the strictest sense, and that cultures are obtainable only by natural growth in the fluids and tissues of infected persons and animals. Thus it was by a combination of natural and artificial conditions that Nocard and Roux[5] first obtained evidences of actual growth of the organism of infectious peripneumonia of cattle, namely, by the use of collodion sacs filled with bouillon and serum, and inserted after being inoculated with infectious peripneumonic lymph into the abdomen of rabbits and cows. These cultures *in vivo*, thus surrounded by a diffusible membrane that permitted a ready molecular exchange between the enclosed and the surrounding fluids, soon gave evidence of growth by the increased infectiousness and clouding of the medium, microscopic examination of which showed forms so minute that with the highest obtainable magnification no definite idea as to their exact morphology could be obtained. This organism, therefore, is considered as on the border line between the visible and invisible. Eventually Nocard and Roux obtained subcultures in Martin's peptone bouillon mixed with a small quantity of rabbit's or cow's serum (1-20), and on agar mixed with this bouillon-serum.

Again, in the case of diseases that only affect man it is not without range of possibility that the failure of our artificial cultures made with infectious material is apparent, and not real. Growth may occur invisibly, but in the absence of susceptible animals even this perhaps somewhat remote possibility can not be settled by means of inoculations. On the other hand, it may be urged that if unknown viruses actually grow on culture media the resulting growth or colonies ought to be visible, as in the case of the virus of peripneumonia, even if the individual organisms are too small to be seen, or invisible for other reasons. In liquid media turbidity or other recognizable evidence of growth would be expected did growth actually occur.

The occurrence of diseases of this character among animals and in plants is of the greatest advantage to the experimental study of the many difficult problems that here confront the investigator. This makes it possible to subject infectious material containing the essential cause to various experimental procedures and then to test the result by means of carefully controlled inoculations of animals.

It remains to be seen whether any of the unknown viruses possess sufficient reducing power to enable one to detect their presence in certain mixtures by means of the bioscopic test devised by Neisser and Wechsberg, and of similar methods. Neisser and Wechsberg's bioscopy is based on the reducing power of living matter by virtue of which it secures the oxygen necessary for its metabolic activities. The test as recommended by them is made by adding sufficient methylene blue to distinctly color a suitable mixture containing cells or bacteria and then excluding the air by means of paraffin. Reduction is marked by decolorization of the fluid, the methylene blue on losing oxygen being changed into leucomethylene blue, which has no color. I have found that a convenient method of making this reaction with liquid cultures and other mixtures is to use glass pipettes drawn out thin on each side of a larger oblong chamber. These are easily sterilized, the fluids are readily drawn in by means of suction, after which the glass may be sealed off on each side of the chamber by applying heat to the thin portions. The tubes are then placed in the incubator. Joest[6] reports that

* The idea that ferments may cause contagious diseases is, of course, not of recent date. In 1878 Henry M. Lyman (Chicago Medical Journal and Examiner, 1878, xxxvii, 689), for instance, suggested that in ferments the molecules are in such rapid action as to modify the modes of motion in organized bodies or the products thereof, and that deviations from the normal furnish the ferments of hydrophobia, glanders, vaccinia, smallpox, measles, etc. Variations in the stability of molecular equilibrium would explain, he says, the variable intensity of infection in typhoid fever and other diseases as well as the fatal persistence with which an obstetrician may carry infection with him by virtue of fermentation in his own person.

5. Ann. de l'Institut Pasteur, 1898, xii, 240-262 and 785-798.
6. Centralbl. f. Bact., 1902, xxxi, 375.

his tests of the reduction properties of the virus of foot and mouth disease by the bioscopic method gave negative results. Further experiments are warranted, and by suitable controls the influence of reducing chemical substances may be excluded, at least in many cases. It is possible that in this way some clew might be obtained as to the presence of living substances that hitherto have eluded search. Numerous reduction experiments with the blood and blood serum of scarlet fever patients have so far not yielded any positive results in my hands.

2. *Mixed or Symbiotic Infections.*—The possibility that some of these diseases may be the result of mixed infection is another conceivable reason for the failures to isolate the specific cause, the search for which so far has been conducted, for the most part at least, on the theory that it concerns single organisms. It is conceivable that two organisms may so influence each other by symbiosis as to change materially the nature of the metabolic products from that characteristic of the organisms when growing alone. In this way non-pathogenic organisms might produce toxic substances with definite pathogenic properties, or the qualities of an originally pathogenic organism might be radically changed. The recent application by Welch of Ehrlich's lateral chain theory to bacteria, with a view to a better explanation of the production of bacteriogenous cytotoxins in infections, may prove helpful also in this case. This conception enables one to understand how it can be possible for an organism under the influence of stimuli from the body in which it has become lodged to produce by its receptor mechanism intermediary bodies that when attached to the cells of the host and complemented, would produce most serious symptoms and lesions. Particularly difficult of detection would be organisms that are pathogenic only in man. Even artificial culture would not necessarily solve the problem. From the facts at hand in regard to smallpox and scarlet fever it seems safe to conclude that in the majority of fatal cases death is not due to the original disease, but to secondary, mixed general infections with streptococci which are demonstrable in large numbers in the blood and in the internal organs of almost every fatal instance of these two diseases. In measles secondary local and general infections also play a most important part in the severe and fatal cases. Nothing definite is known in regard to mechanism whereby these secondary and dangerous infections are established.

It is possible, too, that the hiding place of the pathogenic agent may not have been detected. It may remain localized in some part of the infected body, where it manufactures the toxic substances that cause the outbreak of the general symptoms by which the disease is recognized.

3. *Unstainability.*—It has been pointed out, too, that perhaps some of these infectious agents are unstainable by our present methods. There may be no chemical affinity between the stains used and the protoplasm, or it may be physically impossible for the molecules of the stains to make their way in the interstices of the cytoplasm of the organisms.

4. *Ultramicroscopic Size.*—Furthermore, there is the possibility that certain organisms, whatever their nature, are too minute to be seen. Pasteur, in 1881, suggested that the virus of hydrophobia is too small to be seen. Now there is a definite limit to visibility. Helmholtz showed that because of dispersion of light at the margins of minute objects, those of a diameter less than 0.2 mikron can not be rendered visible in the usual sense. The influenza bacillus is generally mentioned as one of the smallest of bacteria. The diameters are given as about 0.4 mikron broad by 0.8 to 1.2 mikrons long. If it were four to five times smaller it could not be seen. The organism of peripneumonia is so small that it is just visible under the best microscopes, and it may be spoken of as on the border line between the visible and invisible. This leads us to discussion of the question of the existence of ultramicroscopic pathogenic agents, which until a few years ago were objects only of theoretic interest, but which now are receiving much study.

FILTRATION EXPERIMENTS.

For some time various forms of mineral filters—porcelain, infusorial earth, etc.—have been found useful in securing filtrates free from bacteria and other organisms; indeed, filtration is one of the classical methods of sterilization, and recent experiments with the filtration of infectious material from diseases of unknown etiology have given some very interesting and valuable results. A brief review of some of the recent work in this field is, therefore, in order.

1. *Smallpox and Vaccinia.*—So long ago as 1868 Chauveau[7] made the first experiments to demonstrate the corpuscular nature of vaccine virus. His efforts at filtration did not succeed in separating any pathogenic elements from the serum probably because of the imperfect form of filters used, but by carefully devised diffusion experiments he found that the active part of the virus settled at the bottom of his mixtures. In 1891 Schulz and Weil separated by filtration the active parts of vaccine virus from the fluid portion, and since then several other investigators, among them Gorini and Wasielewsky, have confirmed this demonstration. The latest experiments in the filtration of vaccine and smallpox virus are those of W. H. Park.[8] In order to destroy the epithelial cells which might contain the virus and hinder it from passing through the filter, he first crushed the material with fine sand under a pressure of twenty pounds to the square inch, but even now vaccine and smallpox virus failed to pass through Chamberland and Berkefeld filters. The process in itself did not destroy vaccine virus. Hence it may be regarded as definitely settled that the virus of vaccinia and variola is not filterable, as that word is now understood.

Wasielewsky[9] has showed that Guarnieri's intracellular vaccine bodies (*Cytoryctes vaccinæ*), the formation of which can be followed in the corneal cells of the rabbit after the introduction of vaccine virus, do not develop when filtrates of vaccine virus are used. As stated, Wasielewsky successfully inoculated vaccine virus from cornea to cornea through forty-six generations, a fact that virtually proves proliferation of the virus at the site of inoculation when one considers the minute quantity originally introduced. Active vaccine for children and calves was obtained from the last animal in the series. Somewhat similar bodies occur in the skin lesions of variola and vaccinia; and so far it is claimed that it has not been possible to induce such bodies to appear within the cells under any other conditions than vaccinia and variola. Any one reading carefully Wasielewsky's article can not but acknowledge that he builds a strong chain of evidence in favor of the etiologic rôle of the vaccine bodies of Guarnieri in vaccinia, but it should be remembered that Hückel,[10] in an elaborate study, reaches the conclusion that these bodies are the result

7. Comp. rend. de l'Acad. des Sc., 1868, lxvi, 289, 317, 359.
8. Trans. Asso. Am. Physicians, 1902, xvii, 220-221.
9. Zeitschr. f. Hyg. u. Infektionskr., 1901, xxxviii, 212-318.
10. Ziegler's Beitrage, Supplementheft, ii, 1898.

of a special form of cell degeneration caused by vaccine virus only.

But this is not the proper place to discuss fully all recent work on the cause of smallpox and vaccinia. The announcement by Councilman, Brinkerhoff and Magrath, and by Tyzzer, of the presence of certain bodies interpreted by them as development cycles of a protozoan organism, in the lesions of smallpox and vaccinia, represents the latest effort toward the demonstration of the cause of these diseases. The failure of the virus of smallpox and of vaccinia to pass through filters is in harmony with the interpretation that the various bodies described in the lesions of these diseases represent their causative agent.

2. *Hydrophobia.*—The failure to demonstrate the cause of hydrophobia led Pasteur to suggest that it might be too small to be seen. It is currently stated that the virus of hydrophobia does not pass through mineral filters, but Remlinger and Riffat-Bey[11] claim to have passed it through Berkefeld filter 5. Further observations are necessary.

3. *Bovine Peripneumonia.*—This disease is characterized by the accumulation of serous fluid in the interstitial tissues of the lungs. The injection of some of the fluid under the skin is followed by an enormous edematous infiltration and death of the animal. The fluid of such infiltrations is clear, free from distinctly visible corpuscular elements, and bacteriologically sterile when inoculated on the ordinary media. As stated, Nocard and Roux succeeded in demonstrating the presence of an organism by means of intra-abdominal sacs. They found, further, that by diluting the serous fluid with twenty to thirty times its volume of water it becomes possible to secure virulent filtrates by passing through Berkefeld or Chamberland filters. The microbe of peripneumonia does not pass through Chamberland B cylinders. Smears of the cultures obtainable in serum-bouillon and serum-bouillon-agar show forms so minute and indistinct that this microbe marks the border line between the visible and the ultramicroscopic. Its cultures in bouillon are characterized by slight cloudiness, and on agar exceedingly minute colonies develop.

4. *Foot and Mouth Disease.*—The infectious fluid of the aphthous vesicles of foot and mouth disease is limpid and free from visibly formed elements other than cells. Loeffler and Frosch found that this fluid diluted with water remained virulent after passing through Berkefeld filters that refused to pass *B. fluorescens.* These filtrates were bacteriologically sterile and free from recognizable corpuscles. But Kitasato filters, which have smaller pores, did not allow the virus to pass into the filtrate.

5. *Yellow Fever.*—So far as I know the only human disease up to the present time shown by actual experiment to be caused by a virus capable of passing through a filter that generally delivers bacteria-free filtrates in the ordinary sense, is yellow fever. The investigations of Reed, Carroll and Agramonte[12] show "that yellow fever may be produced in non-immune persons either by the bite of the mosquito (genus stegomyia) that has previously been permitted to fill itself with the blood of a patient suffering from yellow fever during the first three days of the attack, or by the subcutaneous injection of a small quantity of blood (0.5 to 2 c.c.) from the general circulation of such a patient during the active stage of this disease." Microscopic search, however, for the specific agent in the blood of patients and in infected mosquitoes in which the micro-organism no doubt undergoes an evolution thus far had been entirely negative.* Carroll then produced yellow fever in two persons by the bite of infected mosquitoes, and with the blood of one of them, withdrawn at the beginning of the third day of illness, the following experiments were made: A quantity of serum, diluted one-half with sterile-distilled water, was passed through a sterile Berkefeld filter, which, on special test, was found to hold back ordinary bacteria; 3 c.c. of this filtrate was injected subcutaneously in three American soldiers, two of whom developed typical attacks of yellow fever, the result in the third being negative. Subcutaneous injection of 1.5 c.c. of blood from one of the cases of yellow fever thus produced gave rise to a typical attack in the soldier who remained well after the injection of 3 c.c. of filtered, dilute serum eight days previously. A subcutaneous injection of 0.75 c.c. of unheated, partially defibrinated blood (the same that furnished the serum for filtration) produced yellow fever in a Spaniard, but in three cases the injection of 1.5 c.c. of the partially defibrinated blood, heated for ten minutes to 55 C., failed to have any pathogenic effect. From these interesting and important results Reed and Carroll drew the conclusions that yellow fever is caused by an agent so minute that it passes readily through the pores of a Berkefeld filter, and that this agent, which they regard as ultramicroscopic, is rendered harmless by heating to 55 C. for ten minutes. Against the view that the yellow fever in these cases was caused by toxin, they urge especially the production of the disease in a third individual, since it would be difficult to understand how so great dilution of toxin would be capable of causing an attack.

6. *Exudative Typhus of Chickens, or Chicken-Pest.*—In certain parts of Italy, especially the northern, in Tyrol and also elsewhere, there occurs a devastating disease among chickens which has been recognized as a distinct disease for about ten years, and which recently has been studied more definitely by Centanni,[13] Maggiora and Valenti,[14] and Lode and Gruber.[15] In order to distinguish the disease from chicken cholera—rabbits are susceptible to chicken cholera, but refractory to this disease—and to give it a non-committal name, Centanni proposes to call it birdpest (Vogelpest), while Maggiora and Valenti, for historical reasons, favor the term "exudative typhus." The clinical and anatomical picture is not unlike that of ordinary chicken cholera and other virulent general infections. It is a disease from which recovery does not seem to take place. The sick animals become quiet; soporose, the comb generally violet in color. (Hence the name Kyanolophiea suggested by Lode and Gruber.) In severe cases the disease may be hemorrhagic. There may be exudative pericarditis,

11. Compt. rend. de la Soc. de Biol., 1903, lv, 730-731.

12. Reed, Carroll and Agramonte: Etiology of Yellow Fever, Jour. Amer. Med. Association, Feb. 16, 1901; Experimental Yellow Fever, Trans. Asso. Am. Physicians, 1901, xvi, 45-71; Reed and Carroll: The Etiology of Yellow Fever, American Medicine, Feb. 22, 1902.

* While this article is passing through the press there has come to hand the report by Parker, Beyer and Pothier of the United States Public Health and Marine-Hospital Service (Yellow Fever Bulletin No. 13), in which the discovery is announced of the development of a sporozoan organism—*Myxococcidium stegomyiæ*—in mosquitoes (stegomyia) that have filled themselves with the blood of yellow fever patients. The importance of this discovery, if confirmed, as regards the causation of yellow fever is apparent at once, and it may be that the results of the filtration experiments of Reed and his colleagues will be explained by the presence in the blood of yellow fever patients of some ultramicroscopic developmental stage of *Myxococcidia stegomyiæ.*

13. Centralbl. f. Bact., 1902, xxxi, 145-152 and 182-201. (Here again references to earlier publications by Centanni.)

14. Zeitschr. f. Hyg. u. Infektionskr., 1903, xlii, 185-214.

15. Centralbl. f. Bakt., 1901, xxx, 593-604. See also Lode, Ibid., 447-451.

pleuritis and peritonitis, often of a gelatinous character, but the anatomical picture is exceedingly variable. Microscopically, there is an intense myocarditis, exudations in the lungs, marked degeneration in the liver and kidneys, and more or less enteritis, all being changes that indicate an acute, violent, general infection.

(To be continued.)

REQUIREMENTS FOR ADMISSION TO MEDICAL SCHOOLS.

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During the last decade no question has excited more discussion among medical teachers than what should be the requirements for admission to college. These requirements have been steadily advanced, but as yet there is no settled conviction as to how far they shall be advanced. In other words, it has not been determined what are the ideal entrance requirements.

In this country the existing requirements vary from what must be studied to complete the eighth grade of the grammar school to what is embraced in the complete curriculum of a college of arts or sciences. At least, the mean between these extremes is reached by all of the best schools of the country. It will not be long before a satisfactory completion of the subjects of a four-year high school course will be demanded for admission to all medical colleges, because the laws of many states under which physicians are licensed to practice now demand this amount of general education. Schools which do not meet the standard set by these laws are not in good standing, and their graduates can practice their profession only in a limited portion of the country.

Entrance requirements are needed (1) to make sure that medical students and graduates shall have enough general education to enable them to mingle with the best people of the land on an intellectual level; (2) to make sure that such subjects have been thoroughly learned as are essential to an understanding of what is taught in a medical curriculum.

It may be said at once that to meet the first of these needs a full college course in arts or science or its equivalent should be taken, but it must not be forgotten that four years devoted to the study of medicine is as liberalizing and as sure to give mental culture as the same amount of time in a school of science, provided the same preliminary education has been had. This fact seems to have been forgotten or overlooked by many who have recently discussed the subject.

In regard to the second need, it may be urged that many of our medical leaders had only a grammar school course, and had no difficulty in understanding the subjects of a medical curriculum and of keeping *au courant* with the advances made in their profession. It must not be forgotten, however, that conditions have changed; that the medical curriculum contained few subjects fifty, nay even thirty, years ago, and that their literature was small, for of them comparatively little was known. Moreover, a kind of preparation is required for the laboratory methods by which medicine is taught to-day that was not formerly. For instance, a boy who has never worked in a laboratory, who has not been taught to reason from what he sees, or even to use his eyes accurately, can not get from the work of the first year of a medical course, as it is now taught, what he should, for much time will be lost in teaching him how to do these things.

It is also necessary that certain subjects be required of those about to study medicine, because many of the more recent discoveries in the fundamental subjects of a medical course have been made possible by earlier but recent discoveries in ancillary sciences. These sciences, therefore, must be studied before medicine is.

I believe that graduates of our best high schools and preparatories have as much general education as need be demanded. They should be capable of expressing themselves clearly and correctly in their mother tongue; should have mastered the tools by which an education is to be acquired; should have powers of mental concentration and enough varied information to be appreciative of all kinds of knowledge. However, only the courses offered by colleges of arts or sciences furnish the kind and grade of instruction which is requisite for an understanding of portions of a modern medical curriculum; therefore, at least a part of a college course must be required for entrance to the medical college. President Hadley has said that just such subjects as are necessary to understand medicine as it is now being taught, and no more or less, should be required. This is pedagogically correct. Therefore, I do not feel in full sympathy with those schools which have nominated as their entrance requirement an A.B. or B.S. degree, or a certificate of having completed one or two years of a course leading to such degree. A bachelor's degree or a fixed period of time in college does not necessitate a proper preparation for the study of medicine, for a student to-day may graduate from any of the leading colleges of arts without having taken chemistry, physics or any biologic course. Such a graduate is no better prepared for medicine than when he entered the college of arts, except that he is more mature and better trained to do hard mental work.

Moreover, the degrees of B.S. and A.B. mean very different things, according as they are obtained from one of the small and inadequately equipped degree conferring institutions or from one of the great universities of our land. For these reasons the indefinite requirement of so many years in a college of arts or science is not satisfactory.

The following subjects are the ones of college grade which it is most important for students and graduates of medicine to know: Inorganic chemistry and qualitative analysis; mechanics, light, heat and electricity; general biology; some comparative anatomy, particularly of vertebrates; German and French, and such botany as will acquaint them with the more important groups of plants; experimental psychology and logic.

These subjects are not all equally important, and if medical schools which now require four years of high school work for entrance are to gradually increase their requirements, the most important should be added first.

A medical curriculum can not be properly graded until chemistry and physics are demanded of those who undertake it, for they are so essential to an understanding of physiology and physiologic chemistry. Therefore, they should be among the first required college courses.

Harvard demands of those entering the medical school a complete course in a college of arts or science, but specifies that they must have studied chemistry. Johns Hopkins goes further in requiring physics, some biology, and German and French. Other medical colleges which have required a part of a bachelor's course have not specified these or other subjects.

General biology is almost as important as chemistry and physics. However, the information which this study insures one is not of so much use as is the

training in a biologic laboratory, for this furnishes the student of anatomy and physiology with such skill as will enable him at once to get the most that is possible out of these subjects as they are taught in the best university medical schools. A knowledge of comparative anatomy will make human anatomy easier and more interesting. It is not, however, as essential for the beginner in medicine as the subjects just mentioned. For the graduate, French and German are essential, in order to keep abreast of professional progress; therefore, they should be acquired preparatory to medicine. Botany, psychology and logic, like comparative anatomy, make the acquirement of other medical subjects easier and increase the pleasure and interest of the student in them.

If four of the most important of these subjects are added to existing entrance requirements, they will rarely be acquired by students in less than two years in colleges of arts or sciences, for, although in themselves they do not make more than a year's work, the schedules of colleges are so planned that they can not be taken simultaneously; and if all the subjects named were required, a college residence of at least three years would be needed. Almost without exception, therefore, other and less technical subjects will be studied as well.

A change in the entrance requirements of medical colleges which is needed, and which will do more to improve the quality of the student body than almost anything else, is to stop admitting on certificates, and to require of all who enter thorough examinations in a few required subjects.

The ideal course for medical students is a combined one of six years, leading to both the degrees of B.S. or A.B. and M.D., which such universities as Michigan, Northwestern and Chicago have been offering. Three years are spent in Michigan and Northwestern in the college of arts, during which time almost or quite all of the freshman course in medicine is completed. Three years more are spent in the medical school. At Chicago University two years are spent in the arts department and four in the medical. Harvard and Cornell make a seven-year combined course. It is so usual for all the best graduates in medicine to spend eighteen months or two years in post-graduate work that these combined courses should be made no longer than is absolutely necessary, for it is as much a detriment to the beginning practitioner to be too old as to be too young. A combined course should be completed, if possible, when the student is 24 or 25 years old. For many years a longer period of education has been required of students of medicine than for those preparing for other professions, although the emoluments of practitioners are no greater, nor as great, as those which the practice of law makes possible. Therefore, neither preparation for the study of medicine nor the arrangement of subjects in the medical curriculum should be allowed to too greatly prolong the student's period of academic and college work.

Method of Arresting Epistaxis.—Matthews is quoted by the *Journal Méd. de Paris* as advocating a condom for arresting hemorrhage from the nose. (This has been mentioned before.) The condom is oiled and inserted in the nose on the end of a catheter. The latter is then partly withdrawn, and through it the condom is inflated. The outer end is then tied around the catheter, and thus forms a "balloon tampon," which can be easily removed at any time without disturbing the clots, by allowing the air to escape first.

CO-OPERATIVE METHODS FOR IMPROVING THE USEFULNESS OF STATISTICAL CLASSIFICATIONS OF CAUSES OF DEATH.*

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One of the most important matters involved in the administration of a registration office is the selection and proper use of a statistical classification of causes of death. The mortality from various diseases must be known in order that the value of methods adopted by sanitary officers for their prevention and restriction may be appreciated, and it is important for many reasons that accurate and fully comparable statistics of causes of death be published. This presupposes the use of some classification of causes of death.

It may be said that the use of a formal classification is unnecessary, as the causes returned by physicians might be stated in alphabetical order. This would be possible for only the smallest areas of registration, and for short periods of time. For a large city, a state, or for the country as a whole, the number of different terms returned as causes of death would be so numerous that it would not be feasible to give each one a separate line in statistical tables. Even where it has been attempted to make use of the alphabetical arrangement numerous terms have usually been condensed under single titles, so that a method of classification was actually in use. Where this is not the case the statistics may be very misleading, and may give rise to annoying blunders on the part of those consulting them unless they first complete the work of proper statistical compilation that was left unfinished by the registration office. As an amusing instance, I may quote the following from a recent issue of THE JOURNAL of the American Medical Association, under the heading, "Clippings From Lay Exchanges":

Tuberculosis of the lungs carried off twenty-five of the victims of disease last month. Seven others died of tuberculosis and four of phthisis.

It may be well at this point to call attention to the limited sense in which the word "classification" is now employed in this connection. It does not refer to a broad and comprehensive philosophical arrangement of diseases, based on general principles and intended to show the natural or scientific relations of the diseases or causes of death. If this were the object of a statistical classification of causes of death at the present time, it would be necessary to acknowledge failure from the start. No ideal classification fully exhibiting the natural relations of diseases and meeting the demands of all classes of scientific workers is yet possible. The tendency is strongly in the direction of doing away with all so-called "groups" or "classes" of diseases and of placing stress chiefly on the definite meaning and inclusion of the individual titles. "Classification," said Dr. Farr, "is another name for generalization." Our object at the present time in statistical classification of causes of death is to do away with generalization as far as possible. The old statistical groups of "zymotic diseases," "constitutional diseases," "diathetic diseases," and the like, have disappeared, or remain only as belated relics of a former nomenclature. Even the distinction between "general

* Read at the Fifty-fourth Annual Session of the American Medical Association, in the Section on Hygiene and Sanitary Science, and approved for publication by the Executive Committee: Drs. S. Fulton, Seneca Egbert and H. M. Bracken.

diseases" and "local diseases" can not be considered of any special importance to-day. The boundary is elastic, and a so-called "local" disease of to-day is placed by the advanced pathology of to-morrow among the general infections.

By the adoption of a statistical classification of causes of death, therefore, we mean nothing more than the use of a certain number of titles of diseases, each with a definite inclusion of terms as returned by physicians on certificates of death. For convenience a certain general arrangement is usually followed, as in the International Classification, now in general use in this country. The titles of this system and the detailed list of terms included under each title are given in the Manual of the International Classification, published last year by the United States Census Office.

This classification was reported by Dr. Jacques Bertillon, as chairman of a committee of the International Statistical Institute at the session held in Chicago in 1893. It was the result of a movement for uniformity in statistics of causes of death that had engaged the attention of registration officials and users of mortality statistics for half a century. The Conference of State and Provincial Boards of Health indorsed it at Detroit in 1897, and the American Public Health Association recommended its general use at Ottawa in 1898, and reported a plan for its regular decennial revision by an international commission to meet at Paris in 1900. This recommendation was indorsed by the International Statistical Institute at Christiania in 1899, and the international commission for the first revision of the classification met at Paris, August 18-21, 1900, by invitation of the French government, representatives from twenty-six countries taking part in the sessions. This Section of the American Medical Association adopted a resolution in its favor at Atlantic City in 1900, and it has since been accepted by every registration state, most of the leading cities, the United States Census Office, United States Department of Labor, etc. It has been adopted by Canada, Mexico and by the countries of Central and South America, and has no rival as an international classification.

Its imperfections have never been ignored by the strongest advocates of its general adoption. It is faulty, as are all other systems. The reason for its use lies not in any perfection of the system, but because it was possible by adopting it to unite on a general basis of uniformity. This we have done, and we are now ready, by coöperative work, to amend and improve it, and make it, by means of the periodical revisions that all classifications require, more definite, more practical, more useful in every sense of the term to all who have occasion to employ statistics of causes of death.

How shall this be done? Only by enlisting the aid of all users of mortality statistics, and ascertaining in just what respects the system requires alteration to best serve their wishes.

Here it may be necessary to explain in fuller detail just what are the relations of vital statisticians to the matter of classification of causes of death generally.

The source of information in regard to causes of death is the medical profession. The individual physician who makes a statement on the medical certificate of cause of death in regard to a case that has occurred in his practice makes the first contribution to that mass of data from which come the mortality statistics. The certificate signed by the physician goes into the local registration office and is there recorded. Possibly, if in a city, it may be compiled there, and the mortality statistics accompanying the annual report of the city board of health be derived therefrom. In our state, as in some other registration states, the certificate is next sent to the central registration office at the capital, and is there permanently preserved. It is again compiled, first, for the Monthly Bulletin of Vital Statistics, and, second, after all delayed returns and corrections have been received, for the annual registration report. Lastly, a transcript of this certificate goes to the United States Census Office at Washington, where it is not recorded, but where the information is transferred to the cards employed in the electric tabulating machinery, and it is again compiled—this time for the annual report on mortality now required by law to be prepared by the permanent Census Office. This is the final statistical report, but all alike—the national, state and local compilations—agree in the fact that the original certificate of death signed by the attending physician is the source of all information. The validity of the statistics can not rise above the authority of their source, and, if the original statements of causes of death as made by the physicians are vague, indefinite and full of error, then the statistics must be defective and unsatisfactory to precisely the same degree.

Compilation is that process by which statistics are derived from the mass of individual records, and, for our special purpose, may be limited to the production of the finished tables of causes of death showing their various relations by locality, date of occurrence, age, sex, color, nativity, etc. It should be a colorless medium by which all of the important features of the original returns may be preserved, in condensed form, and nothing should be added to or subtracted from the significance of the original statements.

Here we may note two leading difficulties of compilation. These are, first, the condensation of the extensive list of terms reported by physicians to fit the comparatively short list of titles alone feasible in statistical reports, and second, the selection of the proper title for compilation when two or more causes have been assigned by the physician. These difficulties increase with the mass of returns to be handled, and are more pressing in the larger offices, where the vast mass of causes and complications renders some uniform system of procedure indispensably necessary.

Some idea of the large number of causes reported by physicians may be gained from examination of the Census Manual of the International Classification. Each one of these terms, with the exception of a few translated from the report of the French commission, has been actually returned on a certificate of death by some physician in the United States. And, moreover, any two or three of these terms may occur on a single certificate, and in any combination. If there were only 5,000 different terms, and there are many more than that, then there would be 25,000,000 different binary combinations of those terms possible, or, disregarding the order of the terms, which is seldom important, there would be 12,500,000 combinations of different terms. Practically, such combinations are endless in variety, and yet in the process of compilation all of these 5,000 terms and 12,500,000 possible combinations must be reduced to the exact number of titles in the system selected. In the International Classification there are only 179 titles in the detailed form, and no classification much exceeds this number.

This process of condensation of medical terms under synonymous titles, or the selection of the true cause of death from several causes assigned by the physician, constitutes a large part of the practical work of a regis-

tration office in the treatment of causes of death. To be of value it must be under medical supervision, and yet, from the considerable amount of clerical labor involved, it is rare to find that a qualified medical statistician passes on each individual certificate of death. As a rule, certain principles and methods of procedure are established, and only exceptional cases are referred to expert judgment. Even if competent medical statisticians gave their personal attention to the assignment of each certificate of death compiled in the various offices, there would be numerous differences of practice, and consequent variations in the resulting statistics, unless a comprehensive system of treatment were adopted in all alike.

The adoption of such a system of assignment of individual single terms is the characteristic feature of the International Classification, which renders it superior for general adoption and the promotion of uniformity to any other system now in use. It gives the title to which each individual term is to be assigned. The question of assignment to one title or another, or the formation of new titles, is a proper subject for settlement at the regular decennial revisions, but between the revisions each term has a definite place in the classification, and all offices using the classification put it there. For the use of other systems there is no authoritative guide. A registration office in this country that undertook to employ the English registrar-general's classification might do so, so far as outward form was concerned, but there would be no assurance that the terms received from physicians' certificates were assigned as the registrar-general would assign them. Each office would be a law unto itself, just as in the old days before the adoption of uniform methods under the international classification.

For the treatment of jointly-returned causes of death no systematic method applicable to all classes of returns has as yet been introduced. It is usual in statistical offices to keep a book of practice showing decisions in such cases, and in time precedents may be collected showing the assignments of the most common causes when returned together. Attention was called to the importance of the subject by Würzburger at the session of the International Commission at Paris, and a tabular arrangement showing the preferences to be given individual titles of the classification was appended to the report of the Commission by Dr. Bertillon. This method, however, deals only with the definite titles, not with the numerous terms of varying degrees of accuracy included under the titles, and the judgment of the statistician would often be required as to whether the relative assignments of certain titles should govern the assignments of certain terms included. Many cases, moreover, including some of the most difficult, and practically all of the terms embraced under general or residual titles, are left to unguided individual decision.

Consideration of the difficulties attending this class of decisions and analysis of the process by which a final judgment was usually arrived at have suggested another plan for the systematic treatment of jointly-returned causes, and one which, in addition, seems adapted to the thorough revision of the international classification so that it will most fully meet the wishes of all of its users. This plan is set forth in a circular[1] of the Committee of the American Public Health Association on Demography and Statistics in Their Sanitary Relations.

When a death is returned from two causes, e. g., typhoid fever and valvular disease of the heart, one of these terms must be selected. The death can not be compiled under both typhoid fever and organic heart disease—at least it can not in any present system of classification. Which shall be chosen? Which title will best represent this case in the compiled statistical tables? Which will best serve the purposes of the users of the statistics?

When the terms, as in the example above, are exactly the same as, or fully equivalent to, the titles of the classification, then the question resolves itself into: "Which title is more important?" Different answers may be given to such a question. The sanitarian, regarding typhoid fever as a dangerous communicable disease, and interested in its prevention, wants to know the exact number of deaths from this disease. He cares nothing about organic heart disease, relatively, but says at once: "Put it under typhoid fever." The actuary or medical director of a life insurance company, dealing with such a return, might consider the statement of heart disease the more important. As a matter of fact, the individual might not have succumbed from typhoid fever if the heart had not been affected, and might have lived for many years with the heart affection but for the intercurrent attack of typhoid fever. The clinician, the pathologist, the sanitarian, the actuary—each may have a different opinion. It is the duty of the vital statistician to endeavor to satisfy the wishes of all, as far as possible, and for that purpose it is necessary to ask for the opinion of each class of users of mortality statistics. Such opinions to be available for use must be comparable, and the most obvious way of attaining this object was to ask for numerical answers. "What would you rate the importance of each title on a definite scale, say from 0 to 10?" Then the more important title, as numerically rated for general purposes, should be preferred, no data as to relative duration, primary or secondary occurrence, etc., being available to modify such judgment.

In a similar case, suppose the return to have been "continued fever" and valvular heart disease. Now, "continued fever," stated alone, is compiled under typhoid fever, but there is some uncertainty about it. It can not be considered as fully equivalent to this title. The registrar in estimating its value as compared with the other cause assigned, necessarily considers this fact, and may decide that a doubtful statement of typhoid fever is less satisfactory for compilation than a positive one of organic heart disease. In other words, we consider two factors in deciding every case of independent joint causes, first, the relative importance of the titles to which the terms would be assigned, and second, the validity of the terms as more or less certainly belonging under the titles selected.

Both of these factors are capable of numerical rating on the decimal or other scale. Having rated the importance of each title, and also the validity of each term as related to its title assigned, then the product of these numbers will give a general weighting number or combining number for each term returned on a certificate of death, by means of which the preference to be given in classification, i. e., assignment to titles, is definitely indicated. Provision would necessarily be made for equal rates, but a very large proportion of cases would be decided directly by the combining numbers.

A very practical advantage of such a system is that the combining numbers or weights could be readily in-

1. The circular was presented in connection with this paper, together with some preliminary ratings of titles of the International Classification obtained under it, which showed the usefulness and entire practicability of the system proposed. For copy of the circular, the special blank, with instructions, prepared for rating the titles of the classification and other information inquiry should be addressed to Mr. W. A. King, Chief Statistician of the U. S. Census, Washington, D. C., who is chairman of the American Public Health Association's committee.

serted in an ordinary index of causes, as in that of the Census Manual, without increasing its length by a single page, and that the decisions between any two out of, say 5,000 terms, could be instantly found. Many millions of separate decisions would be thus condensed, which, expressed in any other way, would require many pages to record, and would be a vast, perhaps insuperable labor to frame. And the principle of each individual decision, as made between two independent terms coming before the registrar, would be precisely the same as that derived from his previously recorded numerical judgment, as expressed in a rating.

It is not my intention to urge that the classification of causes of death shall be an entirely mechanical process. To accomplish the best results it must necessarily be conducted under medical direction, and first-hand examination of the original certificates will often disclose valuable suggestions as to the true place of the return in classification. Nevertheless, the most accomplished medical statistician will find cases where his judgment is uncertain, or where, at different times, he may make contrary decisions. A series of rating numbers would then be most useful, and would tend to unify practice. For many offices, however, where the compilation of data is left more or less entirely to clerks who do not possess medical qualifications, the plain and explicit directions available by means of the ratings would be invaluable.

The advantages of such a system for the criticism and revision of the classification are obvious. With each title and each constituent term assigned a definite value in the opinions of the chief users of statistics, it would be merely necessary to lop off titles of little consequence, and to exclude terms of very uncertain validity under the titles to greatly improve the precision and usefulness of the system. In some cases titles of slight precision would have to be retained on account of the large number of returns received under them, but their low value would be forcibly called to attention, and, in time, the physicians might be brought to avoid them. Indefinite terms that now vitiate the statistics of certain causes would be thrown out by this process of sifting, and a thoroughly revised and renovated classification would be the result. It is physically impossible for a commission to consider all of the points that require attention in an ordinary session of a few days, but with the concrete opinion of registrars, clinicians, pathologists, sanitarians and other classes of users of mortality statistics, definitely expressed in advance and capable of numerical analysis, the work of revision should be most complete and satisfactory.

At present all classifications are lumbered to some extent with useless titles. These are titles of little precision, of rare occurrence, or divided more minutely than the accuracy of returns will warrant. On the other hand, some diseases of great importance are lumped together without reference to the very important clinical, pathologic and etiologic distinctions that should be observed. It might be possible, by eliminating titles of small consequence, to obtain statistics of the causes of death of first importance, in all their necessary details, and also to add a selected list of the most important combinations of causes, without exceeding the usual limit of registration reports.

What is needed at the present time is a full expression of opinion on the practical matters relating to the statistical presentation of causes of death from the entire medical profession. The public health workers have begun the task, because the collection and publication of vital statistics is usually a part of the duties devolving upon sanitary administrations, and the preliminary announcement from the committee of the American Public Health Association, indorsed by the committee of the Conference of State and Provincial Boards of Health of North America, shows how the matter has been gone about. Sanitarians and vital statisticians alone can not make this movement a complete success. The interest and help of the entire profession are necessary adjuncts. The clinician, whether practicing in city or country, whether a teacher in a medical school or a private observer, should render aid. The pathologist should consider the questions involved from his point of view. Men devoted to special branches of medicine, as pediatrics, gynecology, surgery, obstetrics, etc., should give the benefit of their experience. The aid of the various special societies should be obtained, and also, through the coöperation of the state societies, with their constituent county organizations, the friendly feeling and interest of the entire medical profession of the country should be secured for this movement to improve the accuracy and usefulness of mortality statistics. Naturally, with this object in view, we come to the American Medical Association, and one of the purposes of the presentation of this paper is to ask the practical coöperation of the Association, by means of a special committee on vital statistics, with the corresponding committees already organized by the American Public Health Association and by the Conference of State and Provincial Boards of Health.

Many years ago a very able committee was appointed by this Association charged with the duty of "preparing a uniform plan for registration reports of births, marriages and deaths; including a nomenclature and classification of causes of death." Members of this committee were Drs. Edward Jarvis, W. L. Sutton, Wilson Jewell, Edwin M. Snow and R. W. Gibbes, and very able reports were presented to the Association at the sessions of 1858 and 1859. The intervention of the Civil War prevented the continuance of their work, and we are just beginning to be ready to-day, after over forty years, to carry out the principles of uniform and effective registration laws and uniform and comparable presentation of statistical data, especially relative to causes of death, that these pioneers of registration work so zealously advocated at that time. We now have the immense advantage of a permanently organized Census Office representing the Federal Government, and prepared to coöperate, and now effectively coöperating with the state and municipal registration offices and with the committees of those organizations that have undertaken to aid in this work. We now have the great additional advantage of a more thoroughly organized and united medical profession, and by its aid, under the auspices of the American Medical Association, these desirable reforms can be rapidly brought to accomplishment. It is time that a committee was again organized by the Association for this purpose, and I trust that your recommendation will be heartily given for this purpose.

DISCUSSION.

Dr. J. S. Fulton, Baltimore—The situation in America was never more hopeful than it is at the present time. We have a Census Bureau, which is a permanent organization. We have an energetic and (I think I may say) an enthusiastic committee working along these lines; and it certainly seems reasonable to hope that we shall, in the course of a few years, reach the individual contributors to the statistics, the physicians who make out the certificates on which the statistics are based.

It is a great pity that our classification must be mechanical. The mathematics of the subject, as Dr. Wilbur says, very clearly show that we can only have a certain number of places for distribution of the causes of death. That necessitates the absolute loss, from certain columns of mortality, of an indefinite number of causes leading to death, and perhaps introduces inevitable error, since we who are the statisticians compiling these data are rather impressed with our own side of the question of assigning position to certificates of death. It was an excellent idea in the Census Bureau to address inquiries to a great many men in the leading specialties in medicine, asking them to express opinions or give definitions of the various titles in the international classification. I think in that way we can eliminate our own particular bias; or, if we can not eliminate it, we can minimize its error so as to make it of little practical importance.

I received one of these inquiry sheets, of which this is a printed copy, is it not, Dr. Wilbur?

DR. WILBUR—No; that is an average rating from a study of a number of those sheets, representing the average opinion of a certain number of statisticians and sanitarians; merely a preliminary study for the purposes of this meeting.

DR. FULTON—I received such a sheet, asking me to give a rating to each of the titles. I went into it with care, as a man interested in the subject and as a specialist. After I was done I found my mind in exactly the condition in which Dr. Wilbur tells us the minds of so many medical men of the country are. After going over the entire list and reviewing it I found much in my own notes to criticise. Desiring to satisfy myself, I drew a second column, and put down an alternate series of ratings, and I found that in all important titles —the very definite diseases—I had no inclination to change the rating at all. There were a number of titles as to which I was inclined to very slightly increase or diminish my first rating. There were a considerable number of rather indefinite titles to which, on second consideration, I gave a rating very different from that which I had given at first. I was greatly interested in hearing Dr. Wilbur say that such was about the state of mind of other men.

I confess that I don't understand how Dr. Wilbur is going to make this mathematical basis of assignment available for clerks. I am inclined to believe that he will work it out in some practical way, although at present, as I say, I don't understand it. What I do understand very clearly, however, is that this work is going to be available for a successful revision of our classification every ten years. Such careful study year after year will enable us to take very definite and complete data to the next decennial revision. For this purpose I feel assured that the great practical utility is coming out of this part of the work; for the other I am hopeful, though I confess I don't understand it at present.

DR. G. T. SWARTS, Providence, R. I.—My feelings are precisely those stated by Dr. Fulton. When I commenced to express my opinion in figures in regard to the comparative valuation of these different diseases, I found myself somewhat in a quandary. After making my rating the question was whether it was satisfactory to me. I think the result will be that we will have to take the average, as was done in this acceptance of nomenclature classification. I am not satisfied with the classification at all. There are a great many subjects of importance left out, and a great many causes I don't agree with. Nevertheless, I am willing to let my personal opinion go, so that when the statistician finds some reports from one state and some from another, he will know that they are all classified from the same standpoint.

I am willing to submit my figures to what the Census Bureau finds is a proper average. Whether it will prove satisfactory or not, seems ambiguous to me at present, but surely, in the course of ten years, we ought to get to some point where we can understand the subject. It must be, however, thoroughly threshed out in the meanwhile.

Salt and Molasses for Cancer.—Salt as a cure for cancer is announced from India in the lay press, and an Australian physician has found molasses to be a sure cure. Salt and molasses have, at least, the valuable points of cheapness and simplicity.

THE PROPER PERINEAL PROSTATECTOMY INCISION.

NICHOLAS SENN, M.D., LL.D.

Professor of Surgery Rush Medical College; Surgeon in-Chief St. Joseph's Hospital; Attending Surgeon Presbyterian Hospital.

CHICAGO.

Prostatectomy is the operation which is now attracting much attention among surgeons here and abroad. The more general adoption of this operation is comparatively of recent date. The necessity of the removal of the enlarged prostate gland, the most frequent cause of urinary obstruction in men advanced in years, has been recognized for a long time, but it was not until recently that the technic of the operation has been perfected to a degree that rendered it sufficiently safe to bring it within the scope of feasible and advisable surgical procedures. The literature on this subject is growing with astonishing rapidity. Individual and collective experiences are being published in the medical press at short intervals in bringing to the notice of the profession the different operative procedures which are being devised and practiced. The question as to the most feasible route by which to attach the diseased prostate has not been definitely settled. The suprapubic method has many weighty advocates, and for a time was deemed the easiest, most efficient and safest. The perineal route has, however, been given a more extended trial, and a very large experience appears to have decided in its favor. From an anatomic standpoint the perineal operation is certainly the most rational of the two, and will undoubtedly survive the test of time. The removal of the enlarged prostate does not always meet all the indications in the case operated on. Few cases come to the surgeon in which the bladder is intact in consequence of the mechanical obstruction or infection, hence in the majority of cases it becomes necessary to establish free drainage after the removal of the prostate for the purpose of initiating a successful treatment for the coexisting complications. In making the external incision the surgeon must therefore have in view the exposure of the prostate to sight and touch as freely as can be done with safety, and to provide for free drainage of the bladder and the perineal wound. The semilunar incision of Zuckerkandl and the triangular incision of Kocher accomplish neither of these objects to the fullest extent. I have given both of them a fair test and have become familiar with their shortcomings in securing the necessary room and the difficulty encountered in establishing free and efficient drainage for the bladder and perineal wound. The triangular incision of Kocher circumscribes a long wedge-shaped flap, the apex of which is liable to slough, and the curved incision of Zuckerkandl does not procure the necessary amount of room through which the prostate, in difficult cases, can be removed with the requisite degree of precision and safety, and both incisions leave a wound difficult to drain efficiently. The median incision so much praised by some surgeons is altogether inadequate in difficult cases. Every surgeon who has had an extensive experience in perineal prostatectomy has learned that not all enlarged prostates can be removed by enucleation. There are cases in which the diseased organ must be removed by morcellement. It is a rule in surgery which it is always well to bear in mind, and that is to operate as little as possible in the dark in important anatomic localities, and this rule applies with special force to perineal prostatectomy. In obese subjects and in cases of very large prostates it is often exceedingly difficult to bring the parts to be removed within

reach of the index finger. It is under these trying circumstances that the operator will appreciate the advantages of an incision that will expose the prostate freely and bring it within easy reach of the finger or the instruments required for its removal. Very little is gained by attempts to render the prostate more accessible by intravesical instrumental pressure, and such efforts are by no means always harmless. The danger from

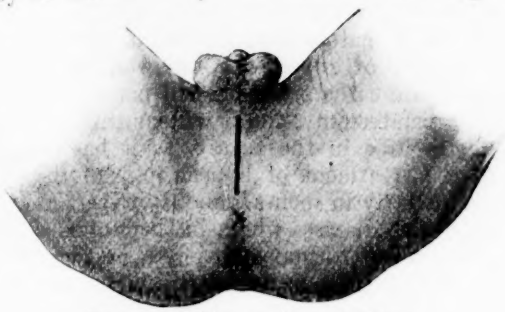

Fig. 1.—Median perineal incision.

hemorrhage and accidental wounding of the peritoneum is reduced to a minimum by resorting to an incision that will expose the prostate in the freest possible manner to sight and touch. I have attempted to do this by combining the median incision with two lateral incisions representing in outline an inverted capital Y. The median incision is made in the usual way, laying bare the membranous portion of the urethra. The lateral in-

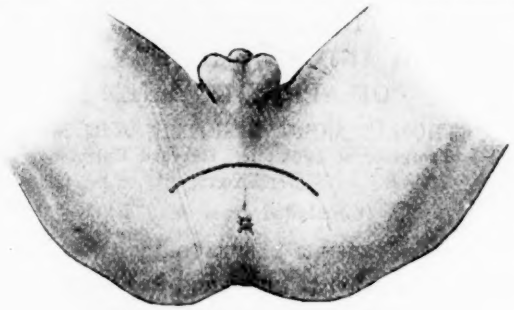

Fig. 2.—Zuckerkandl's incision.

cisions are carried from the lower angle of the median to a point half way between the anal margin and the tuberosity of the ischium, cutting through about the same structures as are involved in the lateral operation for stone in the bladder. The wound is next deepened largely by the use of blunt instruments and all hemorrhage arrested as it occurs, maintaining throughout the

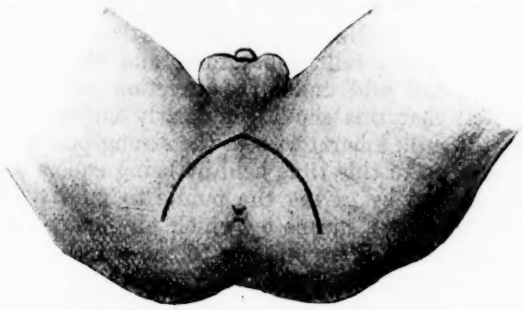

Fig. 3.—Kocher's incision.

entire operation practically a bloodless field. This will give the operator an opportunity to recognize and identify the tissues as he proceeds with the dissection. In this comparatively bloodless way the rectum is detached until the membranous portion of the urethra and the lower segment of the prostate can be distinctly seen and felt in the apex of the deep triangular wound. By using narrow flat deep retractors the rectum is pushed backward and the wound margins are retracted laterally, thus exposing freely the parts concerned in the next step of the operation. I then proceed as follows: On a grooved staff which is now inserted into the bladder the membranous portion of the urethra is incised and the grooved director of Wheelhouse inserted into the bladder. Withdrawing the staff and using the director as

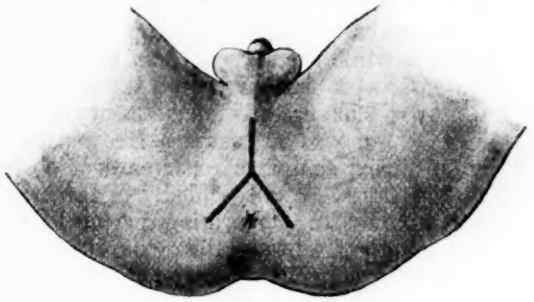

Fig. 4.—Author's incision.

a guide the prostatic part of the urethra is dilated with the left index finger which, after it enters the bladder, serves as a blunt hook with which the prostate is drawn gently downward and forward into the wound. The capsule of the gland is next incised transversely and with the opposite index finger enucleation of the left lobe is commenced. This part of the operation is usually easy,

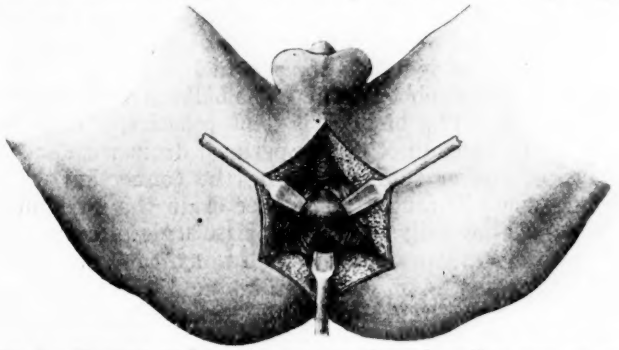

Fig. 5.—Prostate and membranous portion of urethra seen on retraction of wound margins.

sometimes difficult and not infrequently impossible. Recklessness and undue violence are to be carefully

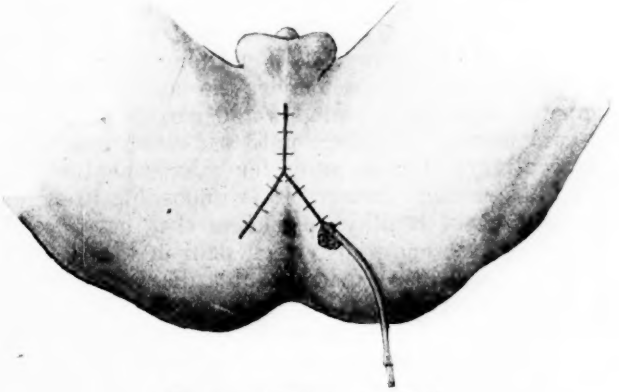

Fig. 6.—Operation completed.

avoided. Enucleation is often facilitated by grasping the lower part of the prostate with my bullet forceps or some other grasping instrument on which traction is made during the process of enucleation. I seldom attempt to remove the prostate in its entirety. Occasionally this can be done, but usually it will be found much easier to remove only one lobe at a time. After the

removal of the left lobe the right index finger is inserted into the bladder and the right lobe enucleated with the left. If it is found impracticable to remove the prostate by enucleation morcellement must be resorted to. The finger in the bladder is almost indispensable in operating by this method. With it the parts are brought within easier reach and it serves at the same time as a valuable guide for the use of the cutting and traction instruments. With grasping forceps portions of the gland are seized, when the necessary traction is made by an assistant while the surgeon does the cutting with blunt-pointed scissors well curved on the flat. Complete prostatectomy in such cases is not necessary, but enough tissue must be removed to insure a free outlet for the urine and to guard against a recurrence of obstruction from the same cause. I am decidedly in favor of a preliminary cystotomy in performing perineal prostatectomy, as it greatly facilitates the removal of the gland by enucleation or morcellement, and in the majority of cases it becomes a necessity for the treatment of complicating affections of the bladder. It is preferable to incise the urethra and take advantage of such an opening into the bladder during the operation than to tear it accidentally, as is so often done when operators undertake a perineal prostatectomy without a preliminary cystotomy. I invariably drain the bladder by inserting a soft rubber drain with two oval fenestra near the vesical end. The drain is fastened in the lower angle of one of the lateral incisions with a suture which includes the outer margin of the wound. The perineal wound is drained with a strip of iodoform gauze which is brought out on the side of the rubber drain. The balance of the incision is sutured. The bladder is kept practically empty by siphonage by connecting the perineal drain with another piece of rubber tubing, making the connection with a glass tube. Through this rubber drain the bladder can be washed out daily with appropriate antiseptic solutions. The iodoform gauze drain should remain for at least five or six days, as its presence in the wound is of the greatest value in preventing infection by leakage of septic urine. The bladder drainage must be continued until the condition of the urine is such as to warrant suspension of intravesical medication. In regard to the indications for prostatectomy history will repeat itself. Every new surgical procedure has had its enthusiastic advocates who championed extreme views and who would recognize no exceptions, and who followed a routine practice. I will refer only to a few operations of recent date that have had such a history. It is not long since thousands of ovaries were sacrificed under the belief that the anticipated climacteric period would correct all kinds of obscure nervous affections until sad experience proved the contrary. Craniectomy for microcephalus had a short but exciting career. It is impossible to estimate the number of healthy appendices that have been removed by surgeons who rely on pain in the right iliac fossa as a conclusive evidence of a diseased vermiform appendix, and resort to the knife as the only remedy. Castration for enlarged prostate has unsexed hundreds of men without yielding them an equivalent in relief for the loss sustained. Gall-bladder surgery has now a few extremists who affirm that it should be dealt with in the same medical manner as the appendix when it is the seat of disease. Instances could be multiplied, but the early history of the operations mentioned will suffice that new operations are very likely to be abused when first placed on trial, and prostatectomy can not escape a similar fate. It is impossible at the present time, so early in the history of this operation, to formulate the exact indications. The size of the prostate is no criterion to go by in deciding on the propriety or necessity of an operation as a large prostate may cause less disturbance of function of the bladder than one only moderately enlarged. The degree of obstruction depends more on the location of the enlargement and the effect of pressure on the urethra than the size of the swelling. Every prudent surgeon would hesitate to recommend a prostatectomy in men 70 to 80 years of age, the subjects of extensive atheromatous degeneration of the arteries or of organic disease of any of the important viscera. Systematic aseptic catheterization will not be displaced entirely by prostatectomy, and it will continue to be a most valuable resource in the future, as it has been in the past, in the treatment of hypertrophy of the prostate, more particularly in men advanced in years the subjects of degenerative diseases which in themselves would contraindicate the performance of any operation of importance except as an immediate life-saving procedure. It will be with this as with any other operative procedure that the best results will be obtained by surgeons who search as carefully for the negative as for the positive indications for the operation. The present technic of prostatectomy will be greatly improved, and its legitimate range of usefulness will be widened with increasing clinical experience and with a more definite knowledge of the etiology and pathology of senile hypertrophy of this gland.

THE ESSENTIAL PRINCIPLES OF INFANT FEEDING AND THE MODERN METHODS OF APPLYING THEM.

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Professor of Pediatrics, Harvard University.
BOSTON.

(Concluded from p. 354.)

MILK LABORATORIES.

The next question is where and in what way the modification of the milk is to be carried out. This problem has been to a great extent solved since the establishment of what are termed milk laboratories. Up to the present time the milk laboratories have been under the control of one company called The Waker-Gordon Laboratory Company, which was established in Boston in 1891 by Mr. G. E. Gordon, Mr. Geo. H. Walker and Mr. J. H. Waterhouse. These milk laboratories are intended to take the same position toward the modification of milk that apothecary shops have to drugs. That is, directions for substitute feeding can be sent in the form of a prescription to the milk laboratory, and should only be dispensed and sold under the direction of a physician. It is well that this should be clearly understood, as it places the milk laboratories in the strong position which they have up to this time held by being endorsed by the physician and by giving the public to understand that they are merely a means by which physicians can accurately carry out their ideas as to the substitute feeding of their patients.

Emanating from Boston, laboratories have been established in this country in New York, Philadelphia, Chicago, Baltimore, Buffalo, Cincinnati, Cleveland, Grand Rapids, Pittsburg, St. Louis and Washington; in Canada in Montreal, Ottawa and Toronto, and in England in London. In connection with these laboratories are farms belonging to the Walker-Gordon Company and especially equipped for supplying the best milk for substitute feeding. The farms and the laboratories

in this way are kept in close touch, and the important matter of a fresh milk supply is thus dealt with and carried as nearly to perfection as is possible under the existing conditions.

The materials which are needed to carry out the physician's prescriptions in these laboratories are:

1. Creams of different but definite fat percentages, obtained either by gravity or by centrifugal separation.
2. Fat-free milk, which is used to increase the percentage of proteids in the substitute food beyond that contributed by the cream.
3. Milk sugar to raise the percentage of the sugar above the amount contributed by the cream and the fat-free milk.
4. Lime-water to increase the alkalinity.
5. Boiled or distilled water as a diluent.
6. Cereal waters and jellies, usually of barley or oat meal, which in certain cases, if the physician prescribes it, can be used as a diluent, or, in the latter part of the first year, to provide the necessary element of starch.
7. Special apparatus for pasteurizing, sterilizing or heating the mixtures at any required temperature.

The milk supply from the farms connected with these laboratories is treated with such care that it shows a remarkably low bacterial content, so that it often can be transported for long distances without the necessity of pasteurization, sterilization or the addition of preservatives.

These laboratories established in the interest of substitute feeding are, then, simply places where milk, which has been obtained under the best conditions, is supplied, where physicians can send their prescriptions calling for any percentage of fat, sugar, proteids, alkalinity or anything else which is desirable, and where these prescriptions can be put up cleanly and accurately.

The following is the sample prescription blank which is at present used in the Walker-Gordon laboratories, and a sample prescription:

THE WALKER GORDON LABORATORY.

	Per cent.
R. Fat	3.50
Milk sugar	6.50
Whey proteids	0.50
Caseinogen	0.25
Lime water	5.00

Heat at 155 F. Number of feedings, 8. Amount at each feeding, 4 oz. Ordered for.....

Address..... Date.....190..

....., M.D.

Physicians who do not wish to subdivide the proteids may erase the words "whey" and "caseinogen," and simply write for the percentage of the total proteids desired. They may also write for as many ounces of cereal water or jelly in each tube as may be desired, the cereal being added in place of the water used in making the modification, so that the percentage of fat, sugar, and proteids are not materially altered.

By examining the prescription it will be seen that the substitute food is written for simply in percentages, and that by this method the physician does not have to calculate the various amounts of cream or separated milk or sugar or anything else which he may wish to have introduced into the food, these being calculated at the laboratory for him. The great advantage in using the laboratory methods for preparing a substitute food is not only the relative greater certainty of the purity and the freshness of the milk supply, but also that the percentages of the different elements of the milk and cream being known each day, the calculations for any especial percentages are more likely to be correct. We must not, however, expect, in the present state of our knowledge, when a prescription of certain percentages is written for, that these percentages in the resulting mixture will be absolutely correct. Practically, however, they have been shown to be reasonably accurate, and necessarily are more accurate than when the mixtures are prepared by other methods or in the patient's home. The following analyses of laboratory mixtures were made by Dr. Edsall of Philadelphia, who is well known as a skilled chemist, as well as a practical worker in the care of children.

The mixtures were calculated at and put up in the Walker-Gordon Milk Laboratory in Philadelphia.

TABLE 9.

Percentages as calculated by the laboratory.		Percentages in the same mixtures as estimated by chemical analysis by Dr. Edsall.	
Fat.	Proteids.	Fat.	Proteids.
1.5	.75	1.3	.822
1.5	.75	1.3	.8217
1.5	.75	1.4	.8217
1.5	.75	1.2	.7503
1.5	.75	1.3	.7140
1.5	.75	1.1	.8574
1.5	.75	1.45	.3217
1.50	.75	1.30(?)	
1.50	.75	1.50	.8574
1.50	.75	1.50	.9288
2.	1.25	2.2	1.2147
2.	1.25	1.9	1.2504
2.	1.25	1.9	1.2147
2.	1.25	2.4	1.2861
2.	1.25	1.6	1.036
2.	1.25	1.7	1.2147
2.	1.25	1.9	1.0717
2.50	1.50	2.4	1.2504
2.50	1.50	2.6	1.3891
2.5	1.50	2.6	1.2881
2.5	1.50	2.6	1.4098
2.5	1.50	2.2	1.143
2.5	1.50	2.6	1.3
3.5	1.75	3.55	1.6355
3.5	1.75	3.3	1.6335
3.5	1.75	3.3	1.544
3.5	1.75	3.28	2.2151
4.0	1.75	3.9	2.1794
4.0	1.75	4.2	1.544
4.0	1.75	3.3	1.536
4.0	1.75	3.8	1.7049
4.0	1.75	3.9	1.557
4.0	1.75	3.7	1.562

After the prescription has been made up at the laboratory by the laboratory modifying clerks the number of tubes required for the special substitute feeding, each tube containing the amount which the physician wishes the infant to have at one feeding, are placed in an ice box especially adapted for the purpose of transportation to the patient's home. On the following day, when the fresh supply is brought, the ice box and tubes of the previous day are taken back to the laboratory. The greatest care is taken not only to have practically sterile tubes go out from the laboratory, but when the empty tubes are returned, to thoroughly sterilize them before they are brought into the modifying room.

Although an accurate composition of a substitute food can be better obtained in a laboratory than anywhere else, yet there arise cases in which a laboratory can not be conveniently reached, or in which for some special reason, the physician or the patient prefers to make the substitute food at home. We must remember, however, that many children are fed in a satisfactory manner from laboratories at a great distance from their homes. Thus, before the establishment of the Chicago laboratory the New York laboratory supplied a number of cases in Chicago. In the same way the Boston laboratories have sent, even during the hot weather, food to different parts of Maine, and the southern states have been supplied from the Washington laboratory. It is quite common for the laboratories to supply food for long ocean voyages, and the laboratory methods have been found to be remarkably successful in this part of the work. As to the relative expense incurred in

feeding from the laboratory, or from mixing the food at home, there is not a very great deal of difference, especially if good milks and creams of different percentages are provided for what is usually known as home modification.

The general principles for modifying milk are the same whether the milk is modified in the laboratory with carefully protected milk, and by skilled hands, or in the homes from whatever milk the individual is able to obtain and by hands as skilled as possible in the special household. The physician must, therefore, in making use of home modification adapt his methods as nearly as possible to those which are employed in the laboratories. This implies the careful choosing of a herd of cows, as clean and fresh milk as possible, and a reasonable certainty as to the strength of the cream used.

HOME MODIFICATION.

The chief difficulty associated with the home modification of milk lies in the uncertainty in regard to the percentages of the materials with which we are working. If creams of guaranteed strength can be purchased from the laboratories or similar places, a home modification may be made with a considerable degree of accuracy. On the other hand, if we are dependent on the use of gravity cream obtained from milk of uncertain composition, the strength of the cream can only be approximately estimated. We may, however, assume that a quart of milk which contains 4 per cent. of fat to start with, and which has been allowed to stand for a varying number of hours, will yield approximately the following percentages of fat in the different layers of milk:

TABLE 10.

Cream, 10 per cent. in the upper	8 ounces after 6 hours.
Cream, 10 per cent. in the upper	11 ounces after 8 to 12 hours.
Cream, 12 per cent. in the upper	8 ounces after 8 hours.
Cream, 16 per cent. in the upper	6 ounces after 8 hours.
Cream, 20 per cent. in the upper	4 ounces after 4 to 6 hours.

Milk containing practically no fat, or, as it is called, "fat-free milk," can be obtained from the lowest eight ounces of a quart of milk which has been set for eight or more hours. The other materials used in modification, that is, lime-water, distilled or boiled water and milk-sugar, can be easily provided.

Having on hand the materials for the modification, the next point consists in making the calculation for the different amounts of each material to be used in order to obtain the desired percentages of fat, sugar and proteids in the resulting mixture. These calculations may be made either by means of formulæ such as have been published by Taylor, Baner and Westcott, or they may be obtained by the feeding-card presently to be described.

If formulæ are to be used, it is essential that we should adopt a standard for the analysis of the different materials used, and the standard which is now most generally accepted may be stated as follows:

TABLE 11.

	Fats.	Sugar.	Proteids.
Fat-free milk	Trace.	4.60	3.60
Whey	Trace.	4.79	1.00
Whole milk	4	4.50	3.50
Eight per cent. cream	8	4.40	3.40
Ten per cent. cream	10	4.30	3.35
Twelve per cent. cream	12	4.20	3.30
Sixteen per cent. cream	16	4.05	3.20
Twenty per cent. cream	20	3.90	3.10

FORMULÆ FOR MILK MODIFICATION.

The most complete series of formulæ for the modification of milk which has yet been published is that of Dr. Thompson S. Westcott of Philadelphia, which was published in the International Clinics, October, 1901. Taking the previous formulæ of Taylor and those of Baner, he has worked out mathematical formulæ which are of universal application, and has established the principles of percentage modification on a truly scientific basis.

The formulæ which he gives are rather too elaborate to be given in this paper. For the sake of completeness, however, it may be well to give the formulæ for obtaining the desired combinations based upon the use of creams and fat-free milk. The use of creams and fat-free milk, instead of the use of cream and whole milk, simplifies very greatly the work of computation, as may readily be seen by referring to Westcott's paper. Moreover, it is a more economical method, as the fat-free milk may be obtained from the same quart from which the cream is separated. The formulæ may briefly be expressed as follows:

TABLE 12.

F.=prescribed percentage of fat.
S.=prescribed percentage of sugar.
P.=prescribed percentage of proteids.
C.=total quantity of cream in ounces.
M.=total quantity of milk in ounces.
W.=total quantity of water in ounces.
L.=total quantity of dry milk sugar in ounces.
Q.=total quantity of mixture.
a =known percentage of fat in cream.
a'=known percentage of fat in milk.
b =known percentage of proteids in cream.
b'=known percentage of proteids in milk.

The amount of cream to be used is:

$$\text{Cream (C)} = \frac{QF}{a}$$

The amount of fat-free milk to be used is:

$$\text{Fat-free milk (M)} = \frac{QP - bC}{b'}$$

The amount of sugar is:

$$\text{Sugar (L)} = \frac{QS - 4.50\ (M+C)}{100}$$

which gives the amount of sugar in ounces.
The amount of water to be added is:

$$\text{Water (W)} = Q - (C + M).$$

A comparatively unimportant error arises in the calculation of the sugar by the assumption that the percentage of sugar in the mixture of fat-free milk and cream is the same as that in whole milk, that is, 4.50 per cent.

To many physicians, however, the use of a formula is more or less inconvenient, both because of the time required to make the computation and because of the difficulty which some minds experience in using algebraic formulæ. In order to simplify the work of calculation, a very practical and simple method has been devised by Dr. Maynard Ladd, a member of the pediatric department at Harvard University.

DR. LADD'S CARD FOR HOME MODIFICATION.

This method consists of a card small enough to be carried conveniently in the pocket and on which are given thirty different combinations of fat, sugar and total proteids with the amounts in ounces of cream, fat-free milk, lime-water, boiled water and milk-sugar to be used in obtaining these combinations.

By referring to this card it is seen that it is so arranged that a physician may exercise a choice in the percentage of cream to be used, and can see at a glance what combinations are possible and what combinations impossible with the creams of different strengths. The calculations are made for twenty-ounce mixtures. For twenty-five ounce mixtures the amount of each ingredient is multiplied by 1¼. For a thirty-five ounce mixture the amount of each ingredient is multiplied by 1¾ and for a forty-ounce mixture the amount of each ingredient is multiplied by 2. The percentage

of lime-water may be increased at will, by remembering that each additional ounce in a twenty-ounce mixture increases the alkalinity 5 per cent., and the amount of lime-water added beyond what is given in the total amount must be subtracted from the amount of water used as a diluent. For accuracy the milk-sugar should be dissolved in a portion of the water, and then enough water added to make the amount called for. The amount of sugar required is expressed in measures; the measure is a small tin dipper obtained at the milk laboratory, and holds just 3⅜ drams, which is approximately a level tablespoonful.

TABLE 13.

No.	20-oz. Mixtures. Percentage of Fat.	Sugar.	Prot'd.	Alk.	Ozs. Fat-Free Milk Used With Creams of 10%	12%	16%	20%	Ounces of Cream. 10%	12%	16%	20%	Ounces Lm. Bld. Wtr.	Milk Sugar. meas.	Sugar % without dry sugar
1	1.50	4.50	0.25	5	*	*	*	0	*	*	*	1½	17½	2	0.33
2	1.50	4.50	0.50	5	*	*	1*	½	*	2*	2½	2½	16	2¼	0.61
3	2.00	5.00	0.25	5	*	*	*	0	*	2*	2½	2½	17	2¼	0.75
4	2.00	5.00	0.50	5	*	*	*	½	*	2*	2½	2½	16	2¼	0.73
5	2.00	5.00	0.75	5	*	*	1*	1	*	2*	2½	2½	15¾	2¼	1.01
6	2.00	5.00	1.00	5	*	*	1*	1½	*	2*	2½	2½	15¼	2¼	1.30
7	2.50	5.50	0.50	5	*	*	*	½	*	3*	3¼	3¼	15¾	2¼	0.73
8	2.50	5.50	0.75	5	*	*	1*	1	*	3*	3¼	3¼	15¼	2¼	1.01
9	2.50	6.00	1.00	5	*	*	1*	1½	*	3*	3¼	3¼	14½	2¼	1.23
10	3.00	6.00	0.50	5	*	*	*	½	*	4*	4¼	4¼	15¾	2¼	0.84
11	3.00	6.00	0.75	5	*	*	1*	1	*	4*	4¼	4¼	15¼	2¼	1.12
12	3.00	6.00	1.00	5	*	*	1*	1½	*	4*	4¼	4¼	14½	2¼	1.35
13	3.00	6.00	1.25	5	*	*	1*	2	*	4*	4¼	4¼	13¾	2¼	1.35
14	3.00	6.00	1.50	5	*	*	1*	2½	*	4*	4¼	4¼	13¼	2¼	1.91
15	3.00	6.00	2.00	5	*	*	2*	3½	*	4*	4¼	4¼	11¾	2¼	2.68
16	3.50	6.50	0.50	5	*	*	*	½	*	5*	5½	5½	15¼	2½	0.78
17	3.50	6.00	0.75	5	*	*	1*	1	*	5*	5½	5½	14½	2½	1.01
18	3.50	6.50	1.00	5	*	*	1*	1½	*	5*	5½	5½	14¼	2½	1.26
19	3.50	6.50	1.25	5	*	*	1*	2	*	5*	5½	5½	13¾	2½	1.68
20	3.50	6.50	1.50	5	*	*	1*	2½	*	5*	5½	5½	13¼	2½	2.02
21	4.00	6.00	0.75	5	*	*	1*	1	*	6*	6¾	6¾	15	2½	0.78
22	4.00	6.00	1.00	5	*	*	1*	1½	*	6*	6¾	6¾	14	2½	1.12
23	4.00	7.00	1.25	5	*	*	1*	2	*	6*	6¾	6¾	13	2½	1.35
24	4.00	7.00	1.50	5	*	*	1*	2½	*	6*	6¾	6¾	11½	2½	1.68
25	4.00	7.00	2.00	5	*	*	2*	3½	*	6*	6¾	6¾	10	2½	2.02
26	4.00	7.00	2.50	5	*	*	2*	4½	*	6*	6¾	6¾	7½	2½	2.56
27	4.00	7.00	3.00	5	*	*	3*	5½	*	6*	6¾	6¾	4¾	2¼	3.20
28	4.00	7.00	3.00	5	*	*	3*	5½	*	6*	6¾	6¾	1¾	1½	3.88
29	4.00	6.00	3.00	5	*	*	3*	5½	*	6*	6¾	6¾	1¾	1	3.88
30	4.00	5.50	3.00	5	*	*	3*	5½	*	6*	6¾	6¾	1¾	¾	3.88

For 25-oz. mixtures multiply amount of each ingredient by 1¼
For 30-oz. mixtures multiply amount of each ingredient by 1½
For 35-oz. mixtures multiply amount of each ingredient by 1¾
For 40-oz. mixtures multiply amount of each ingredient by 2
For 45-oz. mixtures multiply amount of each ingredient by 2¼

* Combination impossible with strength of cream indicated.

The following is an example of the way in which this card may be used: Suppose that it is desired to give a baby a mixture calling for a 4 per cent. fat, 7 per cent. sugar, 1.25 per cent. proteids, 5 per cent. alkalinity, and five feedings of eight ounces. By referring to the table it will be seen that this corresponds to formula 24. Looking into the cream column we see that it is impossible to obtain this combination with a cream of 10 per cent. fat, but it may be obtained with a cream of 12 per cent. fat. As forty ounces of milk are to be given the baby in the course of twenty-four hours, it will be necessary to double the quantity of each ingredient, and the calculation is readily made as follows:

TABLE 14.

12 per cent. cream	6¾ ounces	x 2 =	13½ ounces.
Fat-free milk	¾ "	x 2 =	1½ "
Lime water	1 "	x 2 =	2 "
Boiled water	11½ "	x 2 =	23 "
Milk sugar	2½ measures	x 2 =	5 measures.

The mother is then told how to obtain a cream of 12 per cent. strength, following the rules given above. By referring to the table of creams it will be seen that a cream of 12 per cent. may be obtained from the upper eight ounces of a quart of milk which has been allowed to set in a cool place for eight hours. The mother may be directed either to siphon off this cream, or to remove it by means of a dipper, or she may pour off the top eight ounces into a graduate. Two quarts of milk will be necessary to obtain the amount of cream necessary for this modification. The fat-free milk is obtained from the lowest eight ounces of the quart from which the cream has been removed. The ingredients are mixed and five nursing bottles are then filled, each with five ounces of milk, stoppered with cotton, and then pasteurized or not, as the physician chooses to direct.

Whey-cream mixtures may be obtained by using whey as a diluent, in place of the boiled water, preferably in the combinations containing low proteid percentages. Each two ounces of whey replacing an equal quantity of water in a twenty-ounce mixture will raise the whey-proteids, 0.10 per cent., and will increase the sugar percentage 0.50. The total sugar percentage is therefore, the amount contributed by the cream and fat-free milk, which is indicated in the last column of table 13, plus that of the whey. The amount of dry sugar which must be added to make the desired final sugar percentage can be easily calculated by referring to the following table.

TABLE 15.

	Per cent. of sugar.
One measure of dry lactose in a 20-oz. mixture gives	2.00
One-half measure of dry lactose in a 20-oz. mixture gives	1.00
One-quarter measure of dry lactose in a 20-oz. mixture gives	.50

(One measure is approximately one level tablespoonful.)

Example: If in formula 21 of Dr. Ladd's card, fourteen ounces of whey are added in place of the same quantity of water, the whey-proteids are increased 0.70 per cent., making total proteids of 1.30 per cent. The sugar contributed by the cream is 0.78; that by the whey 3.50—making a total of 4.28. The desired percentage of sugar is 6, therefore the balance of 1.72 per cent. may be obtained by adding a little short of the measure of sugar.

Whey should be made of fresh fat-free milk and liquid rennet, and should be heated to 150 F. (65 C.) to destroy the rennin enzyme before it is added to the cream mixture. One quart of fat-free milk will yield about twenty-four ounces of whey.

EDSALL'S COMPARATIVE ANALYSES.

Dr. Edsall of Philadelphia has carefully estimated the percentages of the fat and proteids where the mixtures have been prepared by means of formulæ in the hospital, by trained nurses, at the out-patient department of the University of Pennsylvania, and by a number of physicians. The results under these conditions were not so good as when the modifications were done in the laboratory. Dr. Edsall has also carefully estimated mixtures that have been put up according to the figures on Dr. Ladd's card, and has found that the results were very accurate, approaching closely those of the laboratory modifications. It would seem, therefore, that the laboratory modifications are best if they can be obtained, but that if home modification is to be used, the

method suggested by Dr. Ladd will probably give the most accurate and successful results.

GENERAL PRINCIPLES OF PERCENTAGE FEEDING.

Having described the general principles of modifying milk and explained the various methods whether by laboratory modification or home modification by special formulæ, or by the feeding card, it may be well for me to say a few words about the general principles of percentage feeding.

This system of percentage feeding has been so much more elaborated in America than elsewhere that it is often spoken of as the American method. It simply means that each individual infant must be studied by itself; that its special idiosyncrasies must be allowed for, and that its food should be adapted to its age, weight and other conditions, whether normal or abnormal. This seems to be the most rational manner of approaching the subject, and, although there are many factors of the problem which have not yet been entirely solved, yet the principle having been determined, greater accuracy will necessarily follow the continuous investigation of the subject.

So far as the materials of the food are concerned, we conclude that it is practical to use cow's milk for a substitute food, and that the milk should be from cows of hardy breeds, such as Durham, Devon, Ayrshire and Holstein. These grades are noted for their constitutional vigor, adaptability to acclimatization, notable ability to raise their young, freedom from intense inbreeding, a distinctly emulsified fat in the milk, and a preponderance in the fats of the fixed over the volatile glycerids.

In regard to the heating of the milk, the temperature should vary according to the especial conditions. Where whey is used to obtain a definite percentage of the whey-proteids, a temperature sufficient to kill the rennin enzyme, used in obtaining the whey, and not so high as to coagulate the whey-proteids, should be employed. An intermediate temperature of 155 F. (68.3 C.) meets this condition.

In hot weather, and when the distance for transportation is great, also in diarrheal diseases, it is sometimes found desirable to heat the milk to a much higher temperature, such as 212 F. (100 C.). It may be said, however, that with the present care which is taken to preserve the milk used for laboratory purposes, it has been found that either sterilization or pasteurization is often unnecessary.

In regard to the reaction, a slightly alkaline reaction seems to accomplish the most favorable results. The lime-water does not appear in itself to interfere with the infant's digestion. Care should be taken, however, when a large percentage of lime-water is added to the milk, such as 15 or 20 per cent., that it should be added just before the milk is given if it is decided to heat the food at a high temperature, such as 212 F. (100 C.). This precaution is taken because if the lime-water and milk-sugar are heated together at a high temperature a reaction takes place seemingly between the lime-water and the milk-sugar, with a resulting discoloration of the milk.

In regard to the percentages which should be given under different conditions, you may perhaps wish to know what my custom has been. We may divide all feeding cases into two broad classes, one in which the infant is normal for its age, both in digestion and nutrition, and a second class in which there is some disturbance in the digestion and nutrition of the infant.

The feeding in the first class of cases, in which the infant is normal at birth, presents very few difficulties, as a rule, when the case is intelligently managed. It is necessary, however, to bear in mind that even a normal infant can not be started at once on a modified milk, corresponding in its percentages to human milk. It is a cardinal principle in the feeding of both healthy and sick infants, to start with weak milks and gradually to strengthen one element after another until the child is taking a milk of full strength. The rapidity with which this can be accomplished will depend largely on the idiosyncrasy of the infant. In some cases we are surprised at the strength of the food which the child can digest, in other cases the progress from a very weak to a very strong milk can only be made slowly and with caution.

In a general way it has been my experience that the fats should be from 1.5 to 2 per cent. during the first week, and from 2 to 2.5 per cent. in the second and third weeks. By the end of the month the infant should be taking from 3 to 3.5 per cent. of fat. Four per cent. of fat should be reached anywhere from the sixth week to the sixth month.

The sugar percentage can be pushed up rapidly, beginning with 5 per cent., and by the end of a month in most cases we can give 7 per cent. It is rarely necessary to go higher.

The proteids present the greatest difficulty, and as a rule must be increased very gradually, beginning with a total percentage as low as 0.50, and preferably in young infants using the splitting the proteid so as to give 0.25 whey-proteids and 0.25 caseinogen. This will suffice for the first week or two. At the end of a month the infant is usually taking 1 per cent.; at the end of the second or third month 1.25 to 1.50 per cent., and from the fourth to the fifth month about 2.00 per cent. The full total proteid of 3.50 is rarely tolerated before the tenth or twelfth month. At any time when necessary or desired the various combinations of the split-proteid can be used instead of the undivided proteid.

Table 16 summarizes what has just been said, giving the formulæ, according to the feeding-card on which the average healthy baby may be started.

TABLE 16.

Premature	No. 1 or 2
2-4 weeks	No. 5, 8, 9 or 11
1-2 months	No. 12 or 13
2-4 months	No. 19 or 20
4-6 months	No. 24 or 25
6-8 months	No. 26 or 27
8-9 months	No 28

RULES FOR FEEDING.

Day feedings begin at 6 a. m., and end at 10 p. m.

Age of Infant.	Intervals in Hours.	No. of Feedings in 24 Hours.	No. of Night Feedings.	Amount ozs. at Each Feeding.	Total Amount of ozs. in 24 Hours.
1 week ..	2	10	1	1	10
2 weeks ..	2	10	1	1½	15
4 weeks ..	2½	9	1	2½	22½
6 weeks ..	2½	8	1	3	24
8 weeks ..	2½	8	1	3¼	26
3 months .	2½	7	0	4	28
4 months .	2½	7	0	4½	31½
5 months .	3	6	0	5½	33
6 months .	3	6	0	5¾	34½
7 months .	3	6	0	6¼	37½
8 months .	3	6	0	7	42
9 months .	3	6	0	7	42
10 months	3	5	0	8½	42½
11 months	3	5	0	8¾	43¾
12 months	3	5	0	9	45

While these changes in the percentage composition of the milk are being made, it is equally important to regu-

late the number of feedings, the intervals between the feedings and the quantity at each feeding. The manner in which this is done is seen in Table 17.

TABLE 17.

RULES FOR FEEDING.

Day feedings begin at 6 a. m., and end at 10 p. m.

Age of Infant.	Intervals in Hours.	No. of Feedings in 24 Hours.	No. of Night Feedings.	Amount ozs. at Each Feeding.	Total Amount of ozs. in 24 Hours.
1 week ..	2½	10	1	1	10
2 weeks ..	2½	10	1	1½	15
4 weeks ..	2½	9	1	1½	22½
6 weeks ..	2½	8	1	3	24
8 weeks ..	2½	8	1	3¼	26
3 months .	2½	7	0	4	28
4 months .	2½	7	0	4½	31½
5 months .	3	6	0	5½	33
6 months .	3	6	0	5¾	34½
7 months .	3	6	0	6¼	37½
8 months .	3	6	0	7	42
9 months .	3	6	0	7	42
10 months	3	5	0	8½	42½
11 months	3	5	0	8¾	43¾
12 months	3	5	0	9	45

The feeding of infants with weak digestions can not be so easily managed. At times it is impossible to say what element of the food is causing the trouble, or it may be that all three elements, fat, sugar and proteids, are at fault, or that the appropriate combinations of percentages has not been employed. The secret of successful management of these cases is to provide rest for the stomach. This can best be accomplished by putting the infant, irrespective of its age, on a milk easily within its digestive power, perhaps giving it no higher than 1.5 to 2 per cent. of fat, 5.00 per cent. of sugar, and 0.50 per cent. of proteid.

The infant is to be kept on this mixture until the discomfort of indigestion has passed away, and then we should begin gradually to increase one element after another, until it is taking a food appropriate to its age. The great mistake made by most physicians is their aversion to making so radical a change as that just indicated. They try to decrease the strength of the milk working downwards until a digestible mixture is obtained, whereas they should begin at once at the bottom and work upward.

The majority of cases of difficult digestion are due to the caseinogen, and it is for this reason that I have found the use of the whey-cream mixtures of the greatest value. I am accustomed to use mixtures giving only 0.25 per cent. of caseinogen and rapidly to run the whey-proteids up to 0.90 per cent. (the highest that can be given); then keeping the whey-proteids at 0.90 per cent., I advance the caseinogen first to 0.50 per cent., then to 0.75 per cent., then to 1.00 per cent. The next change is to a total proteid of 1.50 per cent. and then to 2.00 per cent.

Very rarely, in addition to careful modification, partial or complete peptonization may have to be resorted to, but such cases seldom arise, if we diligently and intelligently carry out the essential principles underlying the adaption of cow's milk to an infant.

Finally, let me reiterate what I have said before in other words. Sick infants can not be fed by rule of thumb. We can only lay down the general principles governing the milk supply, the subsequent modification of the milk and finally its adaption to the particular child. Each sick infant is a study by itself. The most successful feeder of infants will be the man who has at his command the many resources embodied in our modern methods of percentage feeding, and who can appreciate the individual needs of the especial infant.

CLIPPINGS FROM LAY EXCHANGES.

FEARFUL AND WONDERFUL NAME.

"'Coccus babyllus polymohpus lissae' is the name given to the hydrophobia microbe by its discoverer" . . . *Binghamton* (N. Y.) *Herald*, June 29.

ANTIPHENACETINE POULTICE.

"Last night Jeffries defied his trainer and doctor by pulling off the antiphenacetine poultice that had been applied twenty-four hours before."—*Chicago Tribune*, July 27, 1903.

ARE "ECLECTIC" AND "EPILEPTIC" SYNONYMOUS?

"The epileptic staff of the county hospital elected officers," . . . *Chicago Record-Herald*, July 19, 1903; "A meeting of the epileptic staff . . . was held . . ," *Chicago Chronicle*, July 20, 1903.

CARDIECTOMY PROPOSED.

A London despatch to the *New York Herald*, and published in the *Ithaca* (N. Y.) *News* of June 29, gives the details of a case of stab-wound of the heart. The surgeon "at first thought the heart itself would have to be removed, but on washing away the blood clots and raising it a little the puncture was found."

INGESTED INTESTINE.

"Dr. —— came to Newkirk about two years ago. . . . A few months ago a baby was born, elating the young physician and spurring him on to renewed effort. About two weeks ago the doctor incurred appendicitis. . . . The operation revealed the fact that the intestine had been eaten, a dangerous symptom."—*Newkirk* (O. T.) *Journal*, Dec. 25, 1902.

MAY BE CYANOSIS.

"His Disease Puzzles Surgeons—Deaf Mute's Body Turns Dark and He Is Unconscious—May Be Cyanosis.—The peculiar symptoms of the illness from which —— is suffering puzzle the surgeons . . . From chest to head his body is discolored and the physicians are unable to explain the cause. . . . The surgeons finally concluded that he was suffering from cyanosis, which is a diseased condition of the circulation, causing a livid bluish color of the skin."—*New York Tribune*, Aug. 5, 1903.

EVERLASTING ANESTHESIA.

A fervid obituary notice which appeared in the *Somerset* (Ky.) *Journal*, of Jan. 13, 1903, contains the following literary gems:

"How inconceivably cold is the grave and the state of death! To-day in this winter atmosphere, through the drifting snow, into the frozen ground they are burying our recent familiar friend and fellow, Dr. ——, yet his once sensative nerves are so benumbed by the chill of death that he feels not the frigid environment.

"When I, with his employer and friend, ——, saw him the other day (6th inst.), and I took the emaciated hand and met the weak but lucid eye, life's near extinction was apparent, but I did not realize then that in six short hours he would be brought fully under the everlasting anesthesia."

Alcohol Applications in Pleurisy, Peritonitis and Arthritis.—Local application of alcohol has proved effective in curing cases of this kind in the experience of Dr. Ssaweljew of Dorpat, as he reports in the *Allg. Med. Ct.-Ztg.*, lxxii, p. 257. He keeps the part wet with a bandage saturated with alcohol and reports unusually rapid recoveries. In case the patient wishes to be up he applies the alcohol on cotton covered with perforated parchment paper, the whole held in place by a suspending bandage. The alcohol is poured through a glass funnel into the perforations as needed. He does not attempt to explain the mechanism of its action, which has been theorized on by many writers, but contents himself with detailing the results of the measure, which he thinks he is the first to apply in pleurisy.

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SATURDAY, AUGUST 15, 1903.

Owing to the amount of space given to the educational matter in this issue, many of the regular departments are abbreviated and some are omitted.

MEDICAL EDUCATION IN THE UNITED STATES.

This week's issue of THE JOURNAL is the third annual educational number, and contains the statistics regarding medical education in the United States covering the year ending June 30, 1903. We believe that the statistics presented in this number, and for the two years preceding, are absolutely correct. It will not be out of place to say that until THE JOURNAL, four years ago, undertook to annually gather the information, there was no way of knowing even the number of medical colleges, much less the number of students in, and graduates from, these colleges, aside from the information furnished by the publications of the Commissioner of Education, which are usually a year behind. There were plenty of vague guesses and wild statements made regarding the number of colleges, students and graduates, just as to-day the same kind of statements are made regarding the number of physicians in the United States, which is an unknown quantity.

The average reader, making a casual glance at the statistical and other information presented, will possibly imagine that it was a simple matter to obtain it. He will naturally suppose that a letter to the dean or secretary of a college would bring the information desired. We are sorry to say, however, that this is not correct. Three months have been covered in this work, and yet even as we go to press it has been impossible to get a reply from anyone connected with two of the colleges listed. In a number of instances three or four letters to the dean or secretary or president would have to be supplemented by letters to individual members of the faculties or even to outsiders, before the information desired could be had. This criticism, we are happy to say, applies only to less than twenty institutions, the officers connected with the other colleges replying promptly to our requests for information. We extend thanks to all who aided us in gathering these statistics.

Medical Students in the United States.—The number of medical students in the United States for the year ending June 30, 1903, was 27,615. Of this number 24,930 were at the regular schools, 1,498 at the homeopathic, 848 at the eclectic and 339 at the physio-medical and nondescript schools. There was an increase in the attendance at the regular schools of 52 over last year, and an increase of 1,094 over the year previous—1901. In the homeopathic schools there was a decrease of 119 below that of 1902, and a decrease of 185 since 1901. The eclectic, however, seem to have increased in the number registered. This past year there were 848 registered, against 765 of the preceding year, and 664 in 1901, showing an increase of 83 over 1902, and 184 over 1901. Those in attendance at the physio-medical and nondescript schools numbered 339, an increase of 98 over last year, and 115 over 1901. We give below a comparative table:

TABLE OF MEDICAL COLLEGE ATTENDANCE.

Year.	Regular.	Homeopathic.	Eclectic.	Physio-Med. and Nondescript.	Total.
1880*....	9,776	1,220	830	...	11,826
1890*....	13,521	1,164	719	...	15,404
1900*....	22,710	1,909	552	...	25,171
1901.....	23,846	1,683	664	224	26,417
1902.....	24,878	1,617	765	241	27,501
1903.....	24,930	1,498	848	339	27,615

Number of Graduates.—The total number of graduates in medicine for the year ending June 30, 1903, was 5,698, an increase of 699 over the preceding year. By referring to the table given below, it will be noticed, however, that this is an increase of only 254 over the number of graduates for the year ending June 30, 1901. As we stated last year, the decrease in the number of graduates in 1902 is assigned to the increased length of course of study and increased requirements by state boards. As we stated then, the decrease might be considered as only temporary, and this is proving to be true. However, the normal condition as regards the number of graduates to the number of students registered has probably not yet been reached, for a very large number of the medical schools adopted the four years' course during the last three years:

TABLE OF MEDICAL COLLEGE GRADUATES.

Year.	Regular.	Homeopathic.	Eclectic.	Physio-Med. and Nondescript.	Total.
1880*....	2,673	380	188	..	3,241
1890*....	3,853	380	221	..	4,454
1900*....	4,715	413	86	..	5,214
1901.....	4,879	387	148	30	5,444
1902.....	4,498	336	138	27	4,999
1903.....	5,088	420	149	41	5,698

Number of Colleges.—The number of medical colleges in the United States which grant the degree of M.D. is 154. Of these 121 are regular, 19 homeopathic, 10 eclectic, 3 physio-medical, and 1, the National Medical College of Chicago, nondescript, this institution advertising to teach not only according to the tenets of the four "schools" mentioned, but also osteopathy. In addition to the above, there are three schools which give instruction in the first two years' work. In other words, there are 157 institutions devoted to teaching medicine in the United States.

Our report for last year showed that there were at that time 156 medical colleges which conferred the degree of M.D. This, however, included the West Coast Medical College of San Francisco, which we found, when too late, should not have been included. Thus there has been a decrease of one college this year. An analysis of the report of medical colleges, given on pp. 436 to 449, with

* These statistics were obtained from the report of the Commissioner of Education.

the similar report of last year, shows that three new colleges have been started and four have gone out of existence by consolidation or otherwise.

We give below the number of medical schools, and include for comparison the same statistics for the years 1880, 1890 and 1900:

COMPARATIVE TABLE OF MEDICAL COLLEGES.

Year.	Regular.	Homeopathic.	Eclectic.	Physio-Med. and Nondescript.	Total.
1880*....	72	12	6	..	90
1890*....	93	14	9	..	116
1900*....	121	22	8	..	151
1901.....	124	21	10	4	159
1902.....	121	20	10	4	155
1903.....	121	19	10	4	154

Colleges Located in Small Towns.—It is acknowledged by all who have given thought to the subject that a town of less than 50,000 inhabitants can not, except under unusual circumstances, supply the clinical advantages that third and fourth-year students require. Yet the fact is there are thirty medical colleges located in towns of less than 50,000 that confer the degree of M. D. Ten of these schools are in towns of between 30,000 and 40,000, two in towns of between 20,000 and 30,000, six in towns of between 10,000 and 20,000, and nine in towns of less than 10,000.

Ratio of Schools to Population.—There are 14 cities containing 4 or more schools each, and these cities contain 84 of the 154 schools. Below is a table of these cities, with population, number of schools and ratio of population to each school. The population in each instance is based on the census report for 1900. It is quite probable that the population of all of these cities has increased, but, if so, the relative increase is possibly about the same. It will be noticed that New York has the fewest medical schools in proportion to its population, and that Chicago has the distinction of having the largest number of medical schools of any city in the United States.

TABLE OF RATIO OF COLLEGES TO SIZE OF CITIES.

City.	Population.	Number of Schools.	Ratio of Popu. to Each School.
Dallas	42,638	4	10,659
Nashville	80,865	5	16,173
Kansas City	163,752	6	27,292
Louisville	204,731	7	29,247
Indianapolis	169,164	4	42,291
Baltimore	508,957	8	63,619
San Francisco	342,782	5	68,556
Washington	278,718	4	69,679
Cincinnati	325,902	4	81,475
St. Louis	575,238	6	95,873
Chicago	1,698,575	14	121,326
Boston	560,892	4	140,223
Philadelphia	1,293,697	6	215,616
New York	3,437,202	7	491,029

THE IDEAL PRELIMINARY EDUCATION FOR MEDICAL STUDENTS.

That there is unusual interest in the education which prospective medical students are to pass through preliminary to undertaking the studies of the medical curriculum proper is proven by the large number of articles which are being written on the subject, by the discussions which take place in the faculties of medical colleges, and among the students of those colleges, by the action taken by the Association of American Medical Colleges as regards the minimum requirement, and, above all, by the high standards of admission which are being adopted by the schools of higher rank in various parts of the country. There can be no doubt that a strong movement has set in toward a more liberal education of the profession, as a whole, and that this movement is supported not only by the best representatives of the profession itself, but also by the more intelligent part of the public with which the profession has to deal. The reason for this movement may be found in the general elevation of educational standards and in the enormous advances in the medical sciences dependent on progress of knowledge in the fundamental subjects of biology, chemistry and physics.

Up to 1895 no medical school in the United States had rigorously demanded for entrance any educational qualifications higher than those corresponding to graduation from an ordinary high school. In that year the Johns Hopkins Medical School was opened, its faculty making the startling announcement that in order to gain admission to the school applicants must not only possess the bachelor's degree in arts or science from a recognized college or university, but must, in addition, present certificates indicating the completion of a year's work (including laboratory practice) in biology, physics and chemistry, and give evidence of the possession of a reading knowledge of the French and German languages. Great skepticism was expressed at the time regarding the advisability of setting up such a high standard even by a school which was liberally endowed and was not dependent for income on the fees of students. A prominent member of the staff of the school itself declared the entrance requirements to be absurdly high, and prophesied that not a student would apply for admission. However, a dozen students were enrolled during the first year, and the number has steadily increased, until last year there were nearly 100 students in its freshman class.

The success of this school in securing a large number of superior students, capable of beginning the subjects in the medical curriculum on a plane far above that on which they must be begun by students less liberally educated, has been perhaps the most potent influence in leading colleges like Harvard and Western Reserve, and after them, a group of other medical schools connected with universities, to require a college education, or at least some part of it, preliminary to the undertaking of medical studies. From these leading medical colleges the movement in favor of more liberal preliminary training is rapidly spreading into the rank and file; even the conservative Association of American Medical Colleges, with its large membership of widely distributed medical schools, at its last meeting adopted high school graduation as a minimum entrance requirement to become operative in the near future, a standard which five years ago would have been thought impossible of attainment.

*The statistics for these three years were obtained from the report of the Commissioner of Education.

It is easy to formulate the needs of the modern medical student in the way of preliminary education. In the first place, he should be liberally educated; in the second place, he should secure that liberal education at a relatively early age, in order that it may be followed by four or five years of the medical school and one or two years of hospital experience, or foreign travel, and the man not be too old when he enters on the actual practice of his profession; in the third place, he should receive training in certain special subjects—like biology, physics and chemistry—which are fundamentally necessary for a proper understanding of anatomy, physiology, pathology and bacteriology, for otherwise he will be compelled either to take up his medical studies in the non-scientific and superficial way which the lack of such training compels, or, in the medical school, he must spend a large part of the time which should be given to the more strictly medical subjects, to the acquisition of that training; and in the fourth place, beside having a good command of English, he should be able to read German or French, or both, in order that he may consult the original sources of a large portion of medical knowledge and keep pace with the advance of medical thought and practice in the great European medical centers.

If these are the real needs of the prospective medical student, how may the admission requirements to our medical schools be adjusted in order that the faculties thereof may feel confident that entering students have satisfied them? Different educators would doubtless answer this question in different ways, as opinions differ as to what may be regarded as "a liberal education." Many assume that it is synonymous with the bachelor's degree. Others maintain that graduation from the high school, the "people's college," should guarantee a sufficiently liberal education for entrance on professional life. The consensus of opinion among the more intelligent of the laity would probably consider the former view nearer its standard than the latter. A liberally educated man, it would say, must have received a more profound training in languages and literature, and in mathematics and the sciences than is obtainable in even the best of our high schools. A physician or a lawyer who can not use the English language with a tolerable degree of accuracy, who has little or no conception of the historic method, who is not familiar with the chief results and general trend of modern science, and who, in his contact with life, is unfamiliar with that literature which is the interpretation of life, must, it thinks, enter on his career more or less seriously handicapped.

Just here, though, the age difficulty is met. The average college graduate is about 23 years old. If he then study medicine four years, spend a year or a year and a half as a hospital interne, and then go abroad for a year to visit European laboratories and clinics, he will be nearly 30 years of age before he enters on his private practice. All will agree that at 30 a man should be actively engaged in the practice of the profession to which he is to devote his life, and many will maintain that the student who enters the medical school at 23 after four years of college will be more blasé and less plastic than the student who enters the medical college directly from the high school. Against these objections it is urged (1) that while the average age at graduation from college is 23, these figures give a false impression; the majority of students graduate at a much earlier age, the average age being higher owing to the presence in the graduating classes of a few men of 35 or 40 and over; (2) that time is now wasted in college and in high schools, and that if the curriculum in these were modified students might easily enter college at 16 or 17 and graduate at 20 or 21, and be as far on as the average college graduate is to-day at 23, and (3) that the greater success which is possible and the greater personal satisfaction derivable justify the student in prefacing his medical course by a thorough education in college.

The medical student who desires to take both the bachelor degree and the medical diploma has been much helped by the wise requirement made by certain schools that a training in chemistry, physics, biology, French and German shall precede medical study. Colleges preparing students for medicine have had to arrange their curricula so that premedical students may, during their three or four undergraduate years, obtain the necessary work in these subjects, for a baccalaureate degree obtained without them is insufficient to admit a student to that medical school. Indeed, the ordinary baccalaureate degree means so many different things with us that some of the better medical schools are of the opinion that two or three years of college work in which training in physics, chemistry and biology are included, make a far better preparation for medical study than four years of college work in which these subjects are omitted, and they have framed their admission requirements accordingly. The significance of the time element in this whole question is made sufficiently obvious by the various devices which have been introduced to shorten the period for obtaining a degree in arts and in medicine. The first method resorted to was to give the college graduate a year's advanced standing when he entered the medical school. If the baccalaureate had taken the science course this was a fair thing to do at a time when the admission requirements were so low that biology, physics, chemistry and even a little Latin had to be taught in the medical school itself, for the science work such a student had done was, as a rule, far better than he could get in the medical school. If he had not had a science course, the year of advanced standing was of doubtful advantage to him, for he had to crowd the work of four years into three. Now that physics, chemistry and biology are being crowded out of the medical school entirely and forced back into the college curriculum, any advanced standing to a college graduate in the medical school other than that corresponding to work of the medical curriculum itself which he may have previously accomplished is likely to be harmful to him; his course will be crowded with con-

flicts, and, instead of being a better student for his liberal college education, he may be seriously handicapped in his subsequent career.

A second method advised is that of shortening the literary college course to three, or even to two years. The regular undergraduate course at the Johns Hopkins College is a three-year course, and Harvard has an arrangement by which a good student may graduate in three years, instead of four, if he so elects. The president of Columbia University has suggested that the course be so arranged that the bachelor's degree may be given at the end of two years, but there has been a strong outcry against this proposition, and it has nowhere yet been put into practice. Pending the actual shortening of the college course, certain of the universities have practically accomplished the same purpose by establishing laboratories and professorships in the university corresponding to the subjects of the first two years of the medical curriculum and "telescoping" the two courses, so that the student may secure the two degrees, baccalaureate and medical, at the end of six or six and a half years of work; the student in the first two years gets his English, history, mathematics, physics, chemistry, biology and languages, at the beginning of the third year undertakes the first two years of the medical curriculum taught in the university as pure sciences, and at the end of the fourth year receives the bachelor's degree; by this time he has completed the study of the fundamental medical branches and is ready for clinical work, after the successful completion of two years of which he is given the M. D. degree. This plan is at the moment a popular one, for it has not only been adopted by richly endowed institutions, but has met with favor among some of the state universities, many of which are rapidly installing departments of anatomy, physiology and pathology, and are encouraging candidates for the bachelor's degree who propose to take up medicine to elect these subjects as the science work of the third and fourth years. Vigorous protests are everywhere to be heard against this method; many see in it the downfall of the American college and hear in it the deathknell of the time-honored classical course; some even urge that it is dishonest to count the work in anatomy, physiology and pathology toward both degrees.

How all this will ultimately work out we dare not venture to-day. It would not be surprising if later on, when the reforms now in progress in high school education have become effective, students should graduate from high schools a year earlier than they do now; then the college course may be reduced to three years and be differentiated after the first year, so that students looking forward to medicine will follow one course, those intending law another, those looking toward engineering another, and so on. Students would then begin their professional studies at 20 or 21 years of age, and would have behind them not only the liberal culture of the college course, but also that training in specific branches which necessarily precedes the more strictly professional chemistry, biology and languages, at the beginning of the fessions. We suggest this as a possible outcome; but the history of education is full of surprises, and it may well be that some entirely unexpected readjustment at present not conjecturable may be made.

THE MINIMUM REQUIREMENTS.

Above we have been discussing what might be called the ideal preliminary or premedical standard of education. Ideals are excellent, but actual practical life often has to fall far short of ideals. This may be said of the ideal preliminary training for the medical course—we can not yet make all would-be medical students realize the necessity of such an ideal education or force medical colleges to demand it. One thing is possible and essential, that is to fix a working minimum below which none can go, and then duly enforce this standard on all medical colleges. What appears to be a practicable and reasonable minimum at the present time is a good high school course, which must include a certain amount of Latin and living foreign languages.

There are, however, varying high school standards, and a high school diploma in one state or community represents a standard decidedly different from one in another state or community. There are high schools and high schools, and the mere possession of a high school diploma does not always guarantee that the minimum requirements have been attained. The solution of this difficulty is in the standardization of the high school course and the formation of a list of schools that come up to that standard.

But the most important part of the problem to be solved is: What shall be done with him who has no high school diploma or equivalent certificate? In the first place, the applicant must show by examination that he has an equivalent education. In the second place, and this is vital, the examination must not be in the hands of those who are interested in the student passing, viz., those connected with the medical colleges.

This principle must be emphasized, and the right to say whether a man is qualified or not must be taken from those colleges that are run on a purely commercial basis. As we can not separate these from those that are conducted in a scientific and professional spirit, it must apply to all. It seems to us that the plan should be to adopt in each state where there are medical colleges an examination, uniform in all states, conducted by examiners appointed by the boards of registration, as in Ohio, by the state superintendent of schools, or by a similar disinterested body or individual. This method has already been provided for in a few states, and it is to be hoped that it will not be long before it prevails in all. This must be attained by the boards of registration refusing to recognize colleges that do not demand such a certificate, whether the law of the state in which the college is located requires it or not.

We wish it understood that we are not discussing what we believe is the desirable qualification for entrance, but what should be insisted on and enforced as the minimum.

THE VALUE OF MEDICAL BIOGRAPHY TO THE MEDICAL STUDENT.

A true pedagogic method of medical instruction is still a desideratum. The curriculum is so crowded and the time so limited that the acquisition of facts is the first and almost the only consideration. The system generally adopted may make plodding workers, but it lacks the element of mental training that should enter into any system of education, professional or otherwise. The need of this is the greater when the professional student has not had the advantage of a preliminary liberal education that has cultivated the faculties here neglected.

A great teacher of medicine has said: "As the stream of knowledge grows more rapid, we teachers live too much—we have to, I suppose—in the swift current, and few of us have time, too few the inclination, to go upstream to the sources of our art and science, and yet there is not a question which comes before us that can not be most safely approached from the historic side. Even when time and opportunity are lacking for personal investigation, as they often must be to busy teachers, the attitude of mind counts for much . . . ." Unquestionably, much good may be done in stimulating the proper spirit in our students and in giving them a proper perspective by encouraging them to read about the development of medicine as it is made evident in that most interesting form of medical literature, namely, the biography of the masters of medicine and allied sciences. This is wholly rational and based on the most correct pedagogic principles. We do not have in mind so much the establishment of regular courses in medical history, as is urged from time to time, but rather the awakening of interest in the alluring field of medical biography by means of occasional lectures and addresses, and especially by the encouragement to read good books and articles of this character. There is abundant opportunity to direct the attention of students to this aspect of medical literature. The names of great teachers and investigators are mentioned in the class-room every day in connection with their theories and discoveries, many of which have been of epochal importance in the development of a particular branch of science and even of wider significance. What could be more natural for the teacher than to call attention to some of the striking facts and circumstances connected with the lives and the work of such masters in medicine at the same time as the students are directed to books and articles in which more extended information may be obtained? In smaller classes, more particularly those conducted according to the plan of the seminar, students can be asked to prepare sketches of the lives and of certain aspects of the life-work of the founders of and important contributors to the particular branch with which the class is dealing. This plan is followed with success in some of our schools. In such classes it is possible, too, to study the original, classical articles and monographs in which the master-minds of medicine record their observations and discoveries and which form the mile-posts in the onward course of knowledge.

Owing to lack of library facilities, but still more to lack of interest in the historic side of medicine on part of the teachers, the student is given too scant an opportunity to become acquainted with these real classics of medical literature and to benefit from the stimulus that comes with seeking knowledge at its very fountain-head, while sitting, as it were, at the feet of the real masters. And certainly the interest and insight are increased if at the same time he can know something of the lives of these great men, of the conditions under which they worked, and of the state of medicine at the time and in the country in which they lived. We are convinced that it is possible by simple means of this kind to create in many a student a real interest in biographic and historic medical literature an interest that will take on spontaneous growth as he realizes the increased power to grasp subjects when their study can be approached from the developmental side, to say nothing about the pleasure and inspiration that must be felt by the delver into the amenities of medicine. There is just as much of broad human interest and liberalizing influences in medical biography as in any other form of biography, and at the same time it gives the best and liveliest picture of the development of medical knowledge. If any one should doubt the truth of this statement let him read the charming stories of the pioneers of medicine, told with such literary skill by Sir Michael Foster in his Lane Lectures on the History of Physiology during the 16th, 17th and 18th centuries. This book really constitutes the history of scientific medicine during these centuries. The story of such men as Vesalius, Harvey, Malpighi, Borelli, Stensen, Mayow, Lower, Lavoisier and others, with their love of truth and their capacity for patient, honest work, should be in the hands of every student of medicine.

As other examples of important books of this character mention may be made of the series called "Masters of Medicine," which consists of a number of small volumes, each giving an admirable account of the life and work of a man like John Hunter, William Harvey, Edward Jenner, Sir James Simpson, Hermann von Helmholtz, Claude Bernard and others. A few moments daily given to the reading of books of this series will give the hard-worked student cheerful, invigorating and profitable respite from the irksome grind of his routine work in the class-room and laboratory. No better way can be recommended to obtain an insight into the beginnings of the science of bacteriology and its tremendous significance for medicine, human, veterinary, as well as vegetable, in all its bearings, than the study of the life

of Pasteur, to whose genius all will agree medical science owes more than to any other single person the creation of its most progressive epoch. The lasting influence for good, for the setting up of noble ideals, for inspiration to become productive in medical knowledge that the careful reading of a book like Vallery-Radot's Life of Pasteur may exercise on the plastic mind of the developing student can not be overstated! Its reading in connection with the course on bacteriology, for instance, will give to that study an interest that it otherwise must be difficult to arouse even by the most genial teacher. This is a book that will have a most wholesome influence, too, on the intelligent non-medical person in arousing interest in and proper appreciation of scientific investigation along medical lines. Unfortunately, the English translation by Mrs. Devonshire is rather expensive—$7.50. It is a book that ought to be within the reach of every medical student. Of other books of this class we have the Life and Letters of Thomas H. Huxley, of Charles Darwin; the Memoirs and Letters of Sir James Paget; "Jugend-Erinnerungen eines alten Aerztes," by von Kussmaul—a charming book—as well as many others. Then there are numerous shorter articles and addresses of a biographic and historic nature that reading of which by medical teachers and students, as well as physicians in general, will be found profitable and interesting. Most of these are easy of access either in medical journals or as separates. The Smithsonian Institution of Washington has reprinted a large number of contributions of this kind which can be obtained for a nominal sum. In this country, Osler has been and is a fertile author of most excellent biographic studies of American medical men, investigators and pioneers, generally in the form of addresses. The interested teacher with the proper "attitude of mind" will find it easy enough to bring material of this kind to the notice of his classes as proper occasions arise. Let us not forget that students of medicine, in the broadest sense, perhaps more than any other class of educated men, and certainly now more than ever before, must be "broadly liberal in order to be minutely special."

THE RATIO OF STUDENTS TO TEACHERS IN THE MODERN MEDICAL SCHOOL.

The greatly increased cost of medical education in those schools which are teaching modern medicine, in the broad sense, has been frequently commented on, and it is undoubtedly true that this cost has far outgrown the purse of the average student. In the last ten or fifteen years the tuition fees have been raised at least 50 per cent., but the cost of maintenance has been increased to a much greater degree, and it is said that in one institution the average cost for each student is nearly 125 per cent. more than the total fees paid by him. Present indications are, moreover, that the limit of expense for maintenance has by no means been reached, while the fees demanded by a few of the larger schools seem to be as near to the maximum as it is reasonable to exact of the average student. With this condition of affairs it is obvious that if our medical schools are to be maintained on such a basis as will enable them to offer instruction adequate to the demands of the time, larger endowments must be had either through private beneficence or from the state.

What is the explanation of this increase? Are these conditions temporary, or likely to continue for some time to come? Fundamentally, they are to be found in the increased length of the medical course in the broadening of medical science through the developments of bacteriology, etc., and in the change in methods of instruction, and especially in the introduction of laboratory and practical methods of teaching in the fundamental branches, and as well in the clinical branches, though as yet in less degree. New buildings have become necessary for the departments of anatomy, physiology, chemistry, bacteriology, pathology and pharmacology; expensive laboratory equipment, apparatus and supplies are required for the departments. But costly as these things are, they are, for the most part, permanent investments, and have been more than balanced by the increase in the income of the schools from fees. With the more progressive schools the most important item is the increase in the instructional force, and the change in the character of the faculty. Under the purely didactic plan of teaching which prevailed up to fifteen or twenty years age—for the amphitheater clinic of those days was little more than an illustrative didactic lecture—one instructor in each branch sufficed for the whole student body whether it numbered 50 or 500 students. A faculty numbering 20 or 30 was a large one for those days, though not a few schools had an annual attendance of five or six hundred students. Only one member of the faculty, the professor of chemistry, devoted his whole time to teaching, and had, therefore, to be paid a salary, and in the majority of colleges the occupant of even this chair was a general practitioner, who taught without pay. The introduction of laboratory methods has made such an arrangement impossible. A didactic lecture in anatomy or chemistry may be about as advantageously delivered to 500 students as to 30, but the adequate supervision of their work in the dissecting room or in a laboratory of chemistry, physiology, bacteriology or pathology demands an instructor for every 20 or 30 students at the most.

Under the old régime, the larger schools possessed a great pecuniary advantage over the smaller ones. The faculty of a school of several hundred students was not of necessity, nor was it, in fact, materially larger than that of a school attended by 30 or 40 students. Yet the income from fees was several times as large. It was frequently urged as an argument in favor of the smaller schools that more intimate personal contact of the pupil and teacher was secured, and there was some truth in this assertion. The same statement is sometimes made at the present time, but a careful scrutiny of the facts

will show that the statement is, for the most part, no longer true. Single departments, such as those of anatomy or physiology in some of the larger schools, number almost as many instructors as sufficed for the whole faculty twenty years ago. Examination of the figures in five of the largest schools reveals the fact that the ratio of teachers to students is from 1 to 4 or 5, and that it is larger than in many institutions with an attendance of one to two hundred. It might be argued that the majority of these instructors are subordinate members of the faculty, but it should be noted that it is coming to be the custom in this country, as it has long been in Germany and other European countries, to recruit the faculty of the smaller provincial school from that of the larger metropolitan college.

It is not the initial cost of buildings and equipments, the expense of repair and renewal of which is slight, which constitutes the important item of cost in any enterprise. It is the constantly running annual outlay for salaries and the like which so rapidly amount to a large sum. This greatly increased ratio of teachers to students, together with the fact that so many of them must be paid a sufficient salary to enable them to live in the absence of other income, fully explains the great increase of the cost of medical education. In a few medical colleges some of the departments have several salaried instructors in each department, and the aggregate cost is readily seen to be great.

If, as many believe to be the case, similar provision of salaried professors and assistants must be made in the clinical branches, it is difficult to see how the modern medical school can be maintained without very large endowments from some source. The idea which has led to this great change may be briefly expressed as that of "group teaching" as opposed to teaching in "mass." The tendency of the times is all away from "mass teaching" —a method which obtained quite as much in the small as in the large college under the old order of things now passing away. Instruction in "small groups" is imperative under laboratory and practical methods, and such teaching is of necessity very costly.

MEDICAL TEACHING AND MEDICAL RESEARCH AND THE INCREASING OPPORTUNITIES IN AMERICA TO ENTER ITS CAREER.

This interesting subject is discussed briefly in the *University Record* of May, 1903. It is quite appropriate to continue the discussion in this, the educational, number of THE JOURNAL. The subject is of interest to every physician because it deals with questions that touch the vital center of medicine in this country; it is of interest to every medical student because he is concerned directly and personally with medical teaching, and, naturally, he must feel gratified if he learns that his opportunities to study medicine are better than those of his predecessors. The article in question points out that not so very long ago, indeed, only a few years ago, this country offered but one distinctly medical career to the student, namely, the practice of medicine in some form or other. It says:

> Twenty years ago there was but an insignificant number of salaried medical professorships; assistants were not necessary because the teaching was done almost wholly by didactic lectures; very little attention indeed was given to research in the medical schools, and endowments for medical research existed only in the dreams of the visionary. But within a remarkably short time a most marvelous change has taken place. The elevation of the standards of medical education, the introduction of laboratory methods in medical teaching, the fostering influence of our best universities, and the steadily increasing endowments of medical teaching and investigation are some of the most important elements in the growth that has led up to the present period of promise, the blooming period of medicine in America. Rapid and healthy development of this nature can not but be associated with an increasingly diversified differentiation of function, and so there is now larger opportunity than ever before for successful careers as medical teachers and investigators to the exclusion of the actual practice of medicine.
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> Many of our best universities now offer practically the same inducements to properly qualified young men to join the departments of anatomy, physiology, pathology, and bacteriology, as they do in the case of the other university departments, let us say history, physics, chemistry, and zoölogy. In not a few instances positions in the medical departments just named are filled with success by men who have specialized in some one of these lines without having taken the regular courses in medicine. This fact is cited here simply to show that these fields offer welcome opportunities to qualified aspirants for academic careers.
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> In the more purely clinical branches the conditions as yet are somewhat different. Professors and instructors in these branches rarely, if ever, give their time and energy undividedly to teaching and investigation, but combine this work with the arduous duties of private practice. But even in these branches, related so intimately to the practical work of the physician, indications point to new developments that before long may culminate in the establishment in some of our universities of departments of medicine, of surgery, and of obstetrics on the same general basis as other university departments. Necessarily this must lead to the foundation of university hospitals as well as to the creation of a large number of positions to be filled by specially trained men who are willing to devote themselves wholly to the teaching of the clinical branches and to the investigation of the many important problems that await solution in these fields.
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> Then, again, the recent endowments of independent institutions for medical research will offer especially desirable opportunities for those whose ability and training fit them for the highest order of investigative work. The establishment, too, of research professorships in the universities may be found to prove advantageous in order to advance to greater opportunity the man of genius sure to appear from time to time as the number of men engaged in productive work in the medical sciences increases.
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> Attention may be directed also to the fact that government and municipal services are demanding an increasing number of specially trained men to carry on their work, much of which is of the nature of research in various lines. The health departments of our larger cities need men trained in sanitary science; the Philippine civil government has established laboratories in which active investigation is carried on in the rich field of tropical diseases.
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> The managers of many of our state hospitals for the insane are beginning to realize that the surest antidote to the fossilizing influence of routine and institutionalism is to be found in the reorganization of the medical work on a scientific basis so as to attract to this service men of scientific interests and training.

These statements represent the conditions as they are. As the advent of university ideals in medical education is with us as yet barely an accomplished fact, the opportunities spoken of in teaching, in research, in sanitary science are bound to widen more and more as time goes on. The fact that medicine now offers the talented, energetic, well-trained man something more than, and

different from, the chance to crowd into the ranks of the practitioner will attract men with broad training and high ideals. In order to make careers of the kind here discussed just as attractive as possible to the finest types of college student—for no one questions for a moment the importance of this new departure on the progress of American medicine—the question of financial remuneration should be considered most carefully. The prudent man, who must earn his livelihood, will hesitate to embark on an exclusively academic or scientific career unless it appears quite clear that he need have no special fear for the future. Inasmuch as the salaries paid men of this kind probably will not exceed greatly, if at all, those paid men of equal rank in other departments of universities—and such salaries are confessedly small—it is most desirable that some liberal system of pension for age, disability, specially meritorious service, or other cause be instituted. This would result in a feeling of security the importance of which can not be doubted.

HOSPITAL AND CLINICAL WORK.

In the majority of the articles that have appeared in this country on the desiderata of medical education, comparatively little stress has been placed on the clinical training that ought to finish off a medical student's course. Possibly the matter has appeared too self-evident to require special emphasis, but the omission is the more notable since this subject was the principal one discussed in a rather remarkable symposium on medical training published in the German periodicals four or five years ago, in which von Jaksch and several other prominent German physicians took part. The present agitation among German medical students on account of the coming exaction of the "practical year" taking effect in 1906, and which is, therefore, retroactive in the case of any who have matriculated within the past year or two, is in point. The necessity of more than mere theoretical training, and, indeed, that of actual hospital practice, is so far recognized in Germany that it has been made imperative.

The necessity of this requirement is no less in this country, but the facilities for meeting it are far inferior, and the total number of German medical students is hardly more than that of graduates here. How to furnish our five or six thousand annual diplomates with practical clinical instruction and with hospital positions is a problem. The colleges that can furnish only the theory, however richly endowed and supplied with well-qualified teachers, laboratory facilities, etc., will be at a distinct disadvantage. The hospital year means more than simply "walking the hospitals"; it means actual residence and responsibility, and all that that kind of training implies. Here the state universities, with their well-equipped laboratories, etc., unless they have their medical schools in or near populous centers, will, at least in many cases, be at a disadvantage; and this may materially modify the future of the medical departments of some of these institutions. How, on the other hand, it will affect the commercial, or what we may call the personal advertising medical colleges is another problem.

One thing we believe will result from the better recognition of this need—it will, like the state examinations, stimulate to better work, and those medical schools that best fit their students by giving them practical clinical experience, without which they are seldom fitted to take the responsibility of the lives and health of their fellow men, will be the successful colleges of the coming years.

AN EDUCATOR'S FORECAST OF FUTURE MEDICAL EDUCATION.

An eminent educator, President Jordan[1] of Leland Stanford University, in a commencement address, delivered at the Cooper Medical College, San Francisco, gives his views regarding the future of medical education in America. He says the two types of medical colleges in the future will be: One, the present type of which is the medical department of the Michigan University, the aim of which is to elevate the profession in the aggregate, taking men as they are, demanding not excessive, but respectable, preliminary requirements, and maintaining no standard impracticable for the average man, but turning out as well-qualified physicians as the material will allow. The other, the existing type of which is the Johns Hopkins School, will demand the highest preliminary culture and send out only a limited number of the very best into the profession. The former will be the type toward which he thinks the state universities will tend, while a few highly endowed private institutions will have the highest standard, and be special centers of medical science and research. "The practical evolution of the matter," he says, "will be this: The medical school for the exceptional student will require a college course of science with physiology and chemistry as the leading subjects; other sciences, with German and French, being necessary factors. The state medical colleges and those of similar purposes will content themselves with a minimum of two years of college work, along semiprofessional lines, the preparatory medical course." It will be seen from this that Professor Jordan takes no apparent account of the value of a classical education, the sciences in modern languages being, in his forecast, the essentials that will be demanded. Whether this prophecy will be entirely realized is perhaps a little open to question, and it may be that he underestimates the value of the preparatory medical course and the quality of those who will choose it. There are now, and always will be, some institutions that will demand the fullest culture as preparatory to professional studies, and probably in the near future such institutions will grant degress that will be more highly valued, if not nominally more distinguished, than those of the average school.

THE VALUE OF THE CLASSICS IN MEDICAL EDUCATION.

In view of the apparent disregard of classics, it is of some interest to see that in the laws of some of the states a certain amount of classical education is still considered

1. Popular Science Monthly, August.

an essential preparatory requirement. In the new Michigan law there is a provision that the applicant shall have, previous to beginning his course in medicine, "a diploma from a recognized and reputable high school, academy, college or university having a classical course, or shall have passed examination equivalent at least to the minimum standard of preliminary education adopted and published by the board, before the examiners appointed and in accordance with the regulations of the aforesaid board, and at such time and place as the board may designate." In the Maine law the minimum grade of preliminary education before admission to the study of medicine includes, besides the ordinary high school scientific studies, ability to read at sight common Latin prose. There are other regulations of similar import in the by-laws of some state boards, but these that we have mentioned are specified in actual legislation. We believe that the tendency will be to emphasize the importance of a certain amount of classical training, rather than the reverse. Bearing on this point, as we have noticed elsewhere, certain fears have been expressed in Germany because of the admission of graduates of *Realschules,* or non-classical high schools, to the study of medicine. These fears prove to have been groundless because it is found that only a comparative few of such choose the profession of medicine. A certain knowledge of Latin and Greek, at least as much as is required for admission to the freshman class of a good university, is almost essential to the medical man, and more would certainly be very desirable. There is nothing that helps more in the acquirement of the modern languages than some knowledge of the classics, and modern languages are, to a certain extent, indispensable to the high-class medical education.

A FEATURE OF THE MICHIGAN PRACTICE ACT.

It will be remembered, in regard to the Michigan medical law, that when the Nottingham act was first introduced it contained a provision requiring graduates of medical schools of foreign countries which do not recognize the Michigan diploma to undergo a course in Michigan schools, the law corresponding to that of certain provinces of the Dominion of Canada, and was intended to apply to those coming from that country. This was objected to, and considerably criticised by newspapers and others at the time. As the law now reads, an applicant for examination must have a diploma from a legally established and reputable college of medicine in the United States or some foreign nation, "provided such foreign nation accord a like privilege to the graduates of approved medical colleges of this state." In effect, this leaves the matter very much as in the original bill. It will be hard to see how a graduate from a Quebec college, for example, or, indeed, from any foreign country, can be admitted to examination in Michigan under the law. It leaves out, however, the objectionable passage in regard to their having to study in Michigan institutions, which was really copied from certain Canadian provincial laws, and it has not the appearance, therefore, of being drawn up to favor home industries. So far as appearances go, it is a measure of reciprocity, or rather of non-reciprocity, with countries which do not recognize the Michigan diplomas. If we read the law aright, foreigners will have no show hereafter in Michigan.

MEMORIAL TO MAJOR WALTER REED.

A meeting of the committees appointed by the American Medical Association and the American Association for the Advancement of Science has been called to meet at Bar Harbor, Me., August 15, to confer regarding the memorial in honor of the late Major Walter Reed, M.D. There are other committees beside the ones above mentioned, and the object is to secure immediate, concerted action and unanimity of purpose. The chairman of the committee representing the American Medical Association is Dr. W. W. Keen, Philadelphia, and Dr. Daniel C. Gilman, Baltimore, is chairman of the committee representing the American Association for the Advancement of Science. It is to be hoped that the various committees will be heartily supported by those whom they represent, and that in the immediate future a memorial worthy of the man and his work will be dedicated to Major Reed.

Medical News.

CALIFORNIA.

Prison for "Herb King."—"Dr." Frank N. Martin, who dispensed herb medicines as the "Herb King," and referred to in these columns before, was sentenced to thirty years' imprisonment in the state prison at Folsom, for rape committed on a feeble-minded girl who was under his care.

More Bubonic Plague.—Since June 5, three more cases of bubonic plague have occurred at San Francisco, making 98 in all. Pietro Brancota died at 19 Jasper Place, July 20; Pietro Spadafora, son of above, was taken from same address and died at Southern Pacific Hospital; Chin Guie, a native of China, died at 743 Jackson street, July 15.

MARYLAND.

Unlicensed Practitioner Arrested.—W. S. Howard, Vale Summit, was arrested in Frostburg, July 22, charged with practicing medicine in Allegany County without having obtained license from the State Board of Medical Examiners, and with having failed to register with the county clerk. He was held in $300 bail.

The Cumberland Epidemic.—Dr. Francis P. O'Neil, Baltimore, who attended the smallpox cases at the Emergency Hospital in Cumberland for 51 days, has rendered a bill for $512.50, which the city council has ordered paid. There were 41 cases from the city and 6 from the surrounding country. But 2 remain, and they are about to be discharged. The total cost of the epidemic to the city was $5,000.

Baltimore.

New University Building.—The plan for the new building of the University of Maryland provides for a four-story brick structure, 100 by 90 feet, to cost $50,000. The basement and first and second floors will be used by the dental department. The other floors will be used by the medical department for bacteriologic and other laboratories.

Personal.—Dr. J. Williams Lord has resigned the chair of clinical dermatology in the Baltimore Medical College, and Dr. Edgar R. Strobel has received the appointment.——Dr. Nathan E. B. Iglehart has gone to Muskoka, Canada, for a month.——Dr. Albert L. Levy has been appointed resident physician to the Hebrew Hospital, vice Dr. Nathaniel G. Kierle, Jr., resigned, to go abroad.

July Statistics.—During July the health department reported 1,097 deaths and 782 births. There were 506 deaths under 5, or 46.12 per cent. Only one case of smallpox was reported. The chief causes of death were: Typhoid fever, 19; scarlet fever, 11; whooping cough, 9; diphtheria, 8; dysentery, 7; cancer, 40; apoplexy, 36; heart disease, 60; pneumonia, 41; tuberculosis, 121; Bright's disease, 58; suicide, 5; puerperal

septicemia, 6; and diarrhea and enteritis, 233. The deaths for the week ended August 8 were only 179.

MASSACHUSETTS.

Personal.—Dr. Louis A. Prefontaine has been appointed oculist to the Springfield Hospital, sharing that position with Dr. Ralph Carleton.

New Gift to Milford Hospital.—Mr. E. S. Draper has authorized the erection and equipment of a chemical and bacteriologic laboratory for the Milford Hospital recently built and equipped by him and presented to the town.

Home for Insane Colony.—Ground was broken, July 30, for the building for the Grafton colony of the Worcester Insane Asylum, at the intersection of the town lines of Shrewsbury, Westboro and Grafton. The building will accommodate sixty patients. It is planned that the colony shall so develop as to accommodate in a few years from two to three thousand patients.

Boston's Vital Statistics.—During the week ended August 8, a marked improvement was shown over the week before and also over the corresponding week of last year. The deaths reported were only 170, a rate of 14.70 per annum per 1,000. There were reported 30 cases of diphtheria, with 1 death; 15 cases of scarlet fever; 25 cases of typhoid fever, with 3 deaths; 20 cases of measles, and 14 cases of tuberculosis and 10 deaths. Pneumonia caused 13 deaths; heart disease, 13; bronchitis, 2, and marasmus, 7. Of children under 1 year, 60 died and 77 under 5 years.

MICHIGAN.

Smallpox.—Bay City reports several cases and one death.——Houghton County, after a three years' siege, is now free from the disease. About 65 cases have been treated in the isolation hospital since the first of the year, with no deaths.

Old Doctors Long Married.—Dr. J. D. Bear, Detroit, fifty-nine years married, celebrated his eightieth birthday anniversary, July 31.——Dr. and Mrs. William H. Haze, Lansing, recently celebrated the sixty-third anniversary of their marriage, Dr. Haze is in his eighty-seventh year.

Michigan Tetanus.—The State Board of Health is endeavoring to collect facts relative to the prevalence of tetanus in the state, to the exact mode of its causation, and to publish the facts thus obtained for the information and protection of the people. To this end it has prepared and issued a special blank to contain the final report of each case of tetanus reported in the state.

Personal.—Dr. Alfred M. Switzer, Grand Rapids, has resigned as city physician and has been succeeded by Dr. Ralph C. Apted.——Dr. Rush McNair, Kalamazoo, is taking post-graduate work in Edinburgh and Paris.——Dr. Charles C. Wallin has been appointed city bacteriologist of Grand Rapids.——Dr. James R. Arnell, Ann Arbor, formerly instructor in internal medicine at the University, has been appointed associate professor of medicine in the University of Colorado, Boulder.

MISSOURI.

Serious Accident to Physician.—Dr. Kearan C. Cummins, Maryville, after throwing down hay to his horse, was impaled on the tines of the pitchfork, one of which passed through his body, narrowly missing the kidney.

Typhoid Gaining Ground.—St. Louis reports for the four months from April to July inclusive 444 cases of typhoid fever with 74 deaths. In the same period of 1902 there were 197 cases with 46 deaths, and in 1901, 131 cases and 31 deaths. The City Hospital now has 21 typhoid cases.

Personal.—Dr. Lyman T. Reber, for eight years mortuary clerk of the St. Louis Department of Health, has resigned to enter private practice.——Dr. Edward C. Runge, superintendent of the St. Louis Insane Asylum, has resigned, and will accept a position tendered him at the Government Hospital for the Insane, Washington, D. C.

Registration of Consumptives.—An ordinance became law in Kansas City, July 24, without the approval of the mayor, which provides that all persons suffering from consumption in an infectious stage must be registered with the board of health, and must follow the instructions as to isolation and treatment made in each case by the city physician. The lay press says that the law is aimed primarily at the negroes, a large percentage of whom have consumption, and who in their conduct on the streets and in crowds show no care for the danger to public safety from the germs of the disease.

NEBRASKA.

Fire in Physician's Office.—A fire which is said to have started in the office of Dr. Chester D. Barnes, Tecumseh, resulted in damage amounting to $15,000.

Banished from Lincoln.—Edward C. Smith and Gustav Ephraim, styling themselves the "Wonderful Gentile and Jew Healers," and posing as instantaneous and permanent healers of all diseases, were summarily expelled from Lincoln.

Personal.—Dr. J. V. Bechtol, for many years at Friend, has just returned from taking a two months' post-graduate course in New York, and has located at Hastings.——Dr. E. E. Robbins, Ord, has been appointed third assistant physician at the Asylum for the Insane, Hastings.——Drs. Alonzo E. and Lucinda C. Mack, Omaha, have returned after an absence of several months abroad.

Recommend Revocation.—The secretary of the State Board of Health, on August 6, recommended the revocation of the license of Dr. Charles W. Downs, Omaha, for violation of the law forbidding the distribution of advertising relating to sexual diseases which tended to corrupt the morals of people. The advertising is considered of a particularly vicious nature. Downs appeared before the board and made the defense that he did not know there was such a law.

NEW YORK.

Gives Addition to Hospital.—Congressman Littauer has given $25,000 for an addition to the Nathan Littauer Hospital, Gloversville, which he erected several years ago as a memorial to his father.

After Suit, Compromise.—Dr. Charles F. Wicker, Saranac Lake, who sued the village for $1,200 on account of care of smallpox cases last year, and was given a judgment of $1,100 and costs, has agreed to settle for $1,000.

Artesian Water for Ithaca.—On August 6, the Board of Water Commissioners began the distribution of artesian water from wells owned by the city, charging one cent a gallon. Before long it is believed that the artesian water will be supplied to the citizens through the mains of the Ithaca Waterworks Company.

New York City.

No Race Suicide.—Health department records for the week ended July 25 show 1,121 births and 613 deaths in Greater New York.

Daily Medical Journal.—It is announced by the lay press that Dr. Albert W. Ferris and six other New York physicians have formed a company for the publication of a daily medical journal, the first number of which will appear October 1.

Rosenbaum Litigation to Cease.—The litigation over the estate of Mrs. Rosenbaum, valued at $30,000, which was left by will to the German Hospital, is to be closed. Mr. Rosenbaum contested the will, and after his death, his executor endeavored to prevent the hospital from taking possession of the property. He has now, it is said, agreed to give a clear title.

PENNSYLVANIA.

Diphtheria Epidemic.—An epidemic of diphtheria is said to prevail in several boroughs of Delaware County. A number of deaths have been reported, a large proportion of which are from the so-called "black" diphtheria.

Sues for Detention in Isolation Hospital.—Because he was forced into the pesthouse at Schuylkill Haven, Frederick Hinckle has brought suit for $10,000 damages against that borough. The plaintiff claims that he did not have smallpox on admission, nor did he contract smallpox while there.

Pure Food Prosecutions.—Prosecutions have been begun by the State Dairy and Food Commissioner against six Philadelphia firms for alleged selling of beer adulterated with salicylic acid.——A warrant has been issued against a firm of large wholesale liquor dealers charged with selling for blackberry brandy a compound colored by a coal-tar product.——It is hoped by many that the activity of the commissioner will have a widespread influence in arousing public sentiment, and will draw the attention of the National government to the need of general measures against adulterated foods and beverages.——The report of the department for July shows that during June, of the 63 samples of butter analyzed 44 were pure and 19 bogus; 93 samples of lard tested showed 44 pure and 49 impure or imitation; of 68 samples of milk and cream analyzed only 41 were found pure. Sixty-nine prosecutions were brought, 36 of which were in Philadelphia.

Philadelphia.

Resolutions Regarding Dr. Parish.—The faculty of the Woman's Medical College has adopted resolutions eulogistic of the late Dr. William Henry Parish, professor of anatomy in that institution.

Typhoid and Smallpox.—The official record of the board of health for the week ended August 8 showed that 36 new cases of smallpox had occurred, with 5 deaths. The new cases of typhoid fever numbered 108. The prevalence of the latter disease is ascribed to the promiscuous drinking of water at nearby pleasure resorts. The department of health is vigorously carrying on its crusade of vaccination. Some fear is felt that unless the disease is gotten under control before the onset of cold weather, there will be a serious outbreak.

Pasteurizing Plant in Operation.—The pasteurizing plant, the object of which is to supply pure food to the infants of the poor, and which was established by the benevolence of Nathan Straus of New York and of many Philadelphians, was put into actual operation on August 5. Dr. A. R. Green of New York inspected the establishment, and found it in excellent condition. The capacity of the laboratory is 15,000 bottles of pasteurized milk daily. The milk will be sold at the laboratory or at distributing stations at one cent a bottle. Persons who are unable to pay this sum may obtain milk for infants free, by producing evidence that they are worthy.

No Habeas Corpus for the Quarantined.—A writ of habeas corpus brought to obtain the liberty of Norman R. Hyland and family who are under smallpox quarantine in their home, and who were said to be starving, was dismissed. The quarantine was necessitated by the persistent refusal of the man to have his child suffering with smallpox taken to the Municipal Hospital for treatment. Judge Davis, in concluding his decision that the board of health has a right to quarantine the house, commenting on the destitute condition, said that "if provision is to be made for families under quarantine in their homes, there would be danger of many families being under quarantine 365 days in the year."

GENERAL.

Proposed Bureau of Medicines and Foods.—The following preamble and resolutions were presented to the American Pharmaceutical Association, at its recent meeting at Mackinac Island, by Dr. H. H. Rusby, chairman of the committee appointed to consider the proposition to create a Bureau of Medicines and Foods:

WHEREAS, The foods and medicines supplied in the United States do not so uniformly agree with proper standards of purity, quality and strength as they should, and

WHEREAS, A degree of distrust and want of confidence concerning the quality of such foods and medicines prevails to a discouraging extent, therefore, it is

RESOLVED, That a more perfectly organized system for remedying the above-mentioned conditions than that now existing should be devised and put into operation, and

Resolved, That the American Pharmaceutical Association and the American Medical Association, acting in harmony with the United States government authorities, constitute the most competent and trustworthy means for attaining the objects named, and

Resolved, That the American Pharmaceutical Association shall co-operate to this end with the above institutions, provided, that a plan be devised satisfactory to those institutions, and that the committee of this association be continued and instructed to report to the council. In the event that a plan satisfactory to the council of this association be reported to it previous to the next meeting of this association, said council shall be authorized to elect from the members of the American Pharmaceutical Association a board of directors consisting of five members to act with a similar board, in the event of its appointment by the American Medical Association and with the United States government authorities, in the establishment of a National Bureau of Medicines and Foods, and this council shall immediately on the election of such board report the same to the President of the American Medical Association, and

Resolved, That in carrying out these resolutions the following general principles shall be adhered to:

1. That neither this committee nor the proposed board of directors shall have authority to draw on any funds of the American Pharmaceutical Association.

2. That the methods employed for obtaining the objects stated above may include commendation of worthy products, or condemnation of unworthy ones, or both, provided that said methods of condemnation do not in any way involve the American Pharmaceutical Association in legal responsibility.

3. That nothing to be undertaken by such a bureau shall be in conflict with the spirit of the United States Pharmacopeia or with the United States government authorities.

4. That the operation of the proposed bureau shall be free from any attempt to secure financial profit for any of the institutes named herein nor for any of their members or agents; but said bureau is authorized to employ proper means for securing the funds necessary to defray its legitimate expenses.

On motion of Mr. Diehl the preamble and first resolution were adopted, and the whole referred to the council for action. The council recommended that the committee be continued.

FOREIGN.

The "Practical Year" Regulation.—The protests of German medical students against the retroactive feature of the "practical year" regulation, continue. They have been sent to the imperial chancellor from the universities of Bonn, Kiel, Munich and Wurzburg, and others are likely to follow.

French Congress Against Alcoholism.—The first session of this organization will be held October 26 to 29, 1903, at the great amphitheater of the Faculty of Medicine at Paris. It includes all persons and organizations interested in counteracting the ravages of alcoholism. The program includes the discussion of the actual situation and of the present status of the combat against intemperance, the public legislation and private initiative.

Regulation of Proprietary Remedies.—The Hamburg senate has passed an ordinance prohibiting any testimonials or recommendations on the wrappers or receptacles of proprietary remedies, and requiring thereon the name of the drug, the name of the firm preparing it and the price. Dealers are prohibited from repeating prescriptions of such remedies, and those which are to be on order of physicians must have that fact stated on the wrapper. Violations of the law are punishable by a fine of up to $36, or a corresponding period of imprisonment.

Pasteur Institute at Breslau.—There is to be added to the Hygienic Institute of the University of Breslau, under the direction of Professor Flügge, a department for antirabic treatment. This is the result of the experience, during recent years, of the Silesian province of Prussia, where bites of rabid animals have been unusually frequent. It is in the Districts of Oppeln and Breslau that most of these casualties have occurred. Of a total of 263 cases in 1898 in all Prussia, 102 occurred in Silesia; of 303 in 1899, 121; of 233 in 1900, 64. Heretofore, there has been but one Pasteur institute in Prussia, that in the Institute for Infectious Diseases at Berlin.

To Test Typhoid Prophylaxis.—The German reichstag has appropriated $20,000 for a test of the methods of Koch against typhoid. The investigations will be made chiefly at Strassburg, Landau, Saarbrück, Metz and Trier. Koch's plan is based on the early recognition of the disease, rendering it possible to isolate the patients and thus prevent infection. Especially should the ambulatory cases be looked after, as the least affected of these may spread the infection. Koch has also recommended special bacterial stations in the typhoid infected regions, which should work hand to hand with the general practitioners in determining the earliest appearances of the disorder.

Character of Medical Students.—The *Chronik* of the Berlin University says that the fears some have felt in regard to the admission of graduates of the *Realschules* (the non-classical high school) to the medical studies, have thus far been without basis. In the first semester of last year there was not a single one of these students in the medical classes, against 44 in the law schools. In the next semester we find some realschule graduates studying medicine, but the law students are in a very marked majority. The true *Realist*, says the *Allg. Centralzeitung*, chooses for his life occupation the one that affords him the best prospects, this, at the present time, excluding a few exceptional cases, is not the profession of medicine and the knowledge of this fact happily is not limited to the medical students alone.

The Statistics of Medical Students in Germany.—There are, at the present time, according to the *Klinisch-Therapeutische Wochenschrift*, 6,257 medical students in Germany as against 6,398 last winter, and 6,749 in the summer semester, 1902. Although every year shows a decrease in the number of students, still there is a strong over-production of physicians, if one takes into account the proportion between the population and physicians. The natural increase of the population, being yearly about half a million, would warrant a yearly addition of 250 physicians, and then there would be no lack. If all the matriculants of the present time complete their courses there will be yearly about 1,250 physicians sent out, about five times the number actually required. At the present time the number in the respective institutions are: München 1,003, Berlin 976, Leipzig 433, Freiburg 421, Würzburg 396, Kiel 317, Heidelberg 311, Bonn 242, Strassburg 237, Tübingen 207, Breslau 204, Erlanger 201, Greifswald 197, Königsberg 196,

Halle 180, Marburg 176, Giessen 158, Göttingen 150, Jena 131, and Rostock 121.

LONDON LETTER.

Physical Degeneration of the Urban Population—Enormous Proportion of Unfitness for Military Service.

The physical degeneration of the population is a subject which of late has received much attention both in the medical and lay press and been a matter of concern to several writers. The Journal has referred to it before. Alarm is felt at the fact that an enormous number of the town-bred population are unfit for military service. A parliamentary paper by Sir William Taylor, director-general of the Army Medical Service, which has just been published, throws some light on the subject. During the period 1893-1902 there were examined for enlistment 679,703 men, of whom 234,914 were rejected as medically unfit for service, giving a rejection ratio of 34.6 per cent. Sir William Taylor states that no record is kept of the number of men turned away without being examined, but that the number is a large one, though whether it would bring the number rejected up to 60 per cent. he can not say. The majority are rejected on account of poor physical development, namely, under chest measurement, defective vision, under weight, under height, imperfect constitution and debility, disease of veins, disease of heart, defects of lower limbs, varicocele, flat feet and loss and decay of teeth. Bad teeth and flat feet occupy a comparatively low place on the list of causes. But with regard to decay of teeth the number has increased in the last four or five years. It has been estimated that as much as 77 per cent. of the population, or 25,000,000, now live in towns. Of this number probably at least 6,000,000 appear to live in such poverty as to be unable to rear their children under conditions favorable to health.

Revised Classification of the Causes of Death.

We have called attention before (The Journal, May 10, 1902, p. 1242) to the new official list of the causes of death. Every effort is being made to render official statistics as accurate as possible. The registrar general has just issued another memorandum on the subject. The use of the term rubeola for measles is condemned, morbilli being the only Latin equivalent recognized by the Royal College of Physicians. In cases of peritonitis the cause, such as hernia, perforating ulcer, appendicitis or metritis should be stated. When a practitioner returns a cause of death as simply peritonitis, an official form is sent to him requesting a statement of the probable cause of the disease.

Infant Mortality in Bombay.

Dr. D. R. Bardi has recently read before the Bombay Medical and Physical Society an exhaustive paper on infant mortality in that town. In 1899 the infant mortality was 593 per 1,000 births. This appalling loss of life is due to overcrowding, bad sanitation, and above all to ignorance and superstition, which can be efficiently dealt with "only by sustained and organized efforts on the part of the government and the municipality no less than the public at large."

Miscellany.

The Ill Health of Richard Wagner—A Correction.—A typographic error occurs on page 372, line 43, first column, of The Journal of August 8. Instead of "Any spectacles he could get would have neutralized," etc., read: "Any spectacles he could get would *not* have neutralized," etc.

Are There Too Many Physicians?—There seems to exist a general complaint at present, and it appears to be reflected in medical journals to an extent which shows that the matter is almost universal and one on which there is a certain unanimity of opinion. We allude to the plaintive howl raised by a number of physicians concerning the overcrowding of the profession and the large number of physicians who are practicing medicine or attempting to do so. This wail naturally leads us to inquire whether there are, in reality, too many physicians. Of course, this leads to a critical inquiry into the terms which enter in the proposition, and the first one is as to what constitutes a physician. Any one who calls himself such or who can dignify his name with the affix "M.D." is not necessarily, on that account, a physician. There seems to unfortunately exist an idea that the mere fact of graduating at a medical college makes a physician; when, as a matter of fact, it merely qualifies the individual to begin studying in a rational manner. The title conveyed by the degree, in too many cases, reminds us of the old cynic's aphorism, *doctor sed non doctus*. The recent graduate who assumes learned looks and indulges in technical phrases is soon uncovered, and the veriest tyro soon discovers his deficiencies. He is soon relegated to the great band of physicians who have no practice, and it is this very fact which has led to the mistaken idea that there are too many physicians. Again, there are those who are employed to do what might be termed semi-medical or purely office work, and these certainly can not be looked on in the light of physicians. Another cause of complaint arises from the older members of the profession who are unreasonable in their querulous observations. They forget that they have not kept abreast of the progress made in the medical and surgical sciences and that they have remained in the same old rut, depending on their imperfect methods of examinations and on therapeutics which long ago were abandoned on account of their inefficiency. The younger generation has been trained to exact methods, in scientific diagnosis and modern rational methods of treatment. These causes have naturally contributed to a marked lessening of the practice and diminution in numbers of the patients of the older physicians, who but too often are derisively called "moss-backs." For them, there are too many physicians. They have felt the oncoming of a more competent generation of medical practitioners—*Hinc illæ lachrymæ!* We hardly think that there are too many physicians—we know that there can not be too many good ones. In this matter, as in all others, the law of evolution will hold. The weakest will go to the wall and the better, and, therefore, stronger portion will fittingly exemplify the law of the survival of the fittest.—*St. Louis Med. and Surg. Jour.*

Marriages.

Robert Granger, M.D., to Mrs. Lulu Howe, both of Cincinnati, August 6.

Jacques Holinger, M.D., to Miss Cora Follen, both of Chicago, July 29.

James S. Covey, M.D., to Mrs. W. F. Cochran, both of Culleoka, Tenn., August 6.

Elizabeth Janet Child, M.D., Bethel, Vt., to Dr. Daniel Freeman of Chicago, August 6.

Carroll McGinnis, M.D., Starbel, Ohio, to Miss Louise Himmelrath of Cincinnati, July 27.

Kate B. Gardner, M.D., to George W. Heumann, M.D., both of St. Louis, at Clayton, Mo., July 29.

Howard J. Williams, M.D., Muskogee, I. T., to Miss Sarah Annette Barnum of Kansas City, Mo., July 28.

Deaths.

Francis Turquand Miles, M.D. Medical College of South Carolina, 1849, of Baltimore, died, July 30, after a year's illness, from prostatic disease and multiple neuritis, aged 76. After studying in Paris he entered the faculty of his alma mater, filling successively various positions until 1860, when he became professor of physiologic anatomy. He served throughout the Civil War in the Confederate Army, being a surgeon the last year. At the close of the war he resumed his practice, and again visited Europe to study nervous diseases. He removed to Baltimore in 1868. He was appointed professor of anatomy in Washington University Medical School and later professor of anatomy and clinical diseases of the nervous system at the University of Maryland. In 1880 he was transferred to the chair of physiology, from which he resigned in 1903, on account of ill health. Dr. Miles was a member of the Medical and Chirurgical Faculty of Maryland, and had been vice-president. He was president of the American Neurological Association from 1880 to 1882; he was an honorary member of the American Associaton of Physicians, and had been a consulting physician of the Johns Hopkins Hospital since its foundation in 1889.

John Washington Divine, M.D. University of Nashville, Tenn., captain and assistant surgeon in the United States Army during the Civil War, and thereafter a practitioner of Tazewell, Tenn., died at his home in that place, from prostatic disease, July 28, after a long illness, aged 66. The Claiborne County Medical Society, of which Dr. Divine was a member, at a meeting, August 3, passed suitable resolutions in his memory.

Reuben Barney, M.D. Albany (N. Y.) Medical College, 1865, a member of the American Medical Association, the Medical Association of Missouri, and the International Association of Railway Surgeons, some-time president of the Chillicothe Board of Health, and of the city and county and Grand River district medical societies, died at his home in Chillicothe, Mo., July 16, from endocarditis after a short illness, aged 59.

Francis L. Morhard, M.D. Eclectic Medical College of the City of New York, 1896, a dentist of New York City, was instantly killed at his summer home at Stapleton, Staten Island, by an electric shock received while he was presumably endeavoring to adjust an imperfectly insulated wire in his cellar, aged 37.

Headley V. McNeer, M.D. College of Physicians and Surgeons, Baltimore, 1885; Bellevue Hospital Medical College, New York, 1886; a member of the American Medical Association, died at his home in Bramwell, W. Va., July 17, after an illness of two days, supposed to have been due to a ruptured abscess of the kidney.

Joseph Ferguson, M.D. University of Pennsylvania, Philadelphia, 1866, formerly medical director of the Pennsylvania Division, G. A. R.; surgeon of the Lady Franklin Alaska expedition in 1866, and author of "Life Struggles in Rebel Prison," died in Philadelphia, July 25, aged 63.

Fife Fowler, M.D. University of Aberdeen, Scotland, 1858, one of the founders and dean of the Royal College of Physicians and Surgeons, Kingston, Ont., and president of the Ontario Medical Council in 1892, died at his home in Kingston, August 2, aged 80.

George H. Greene, M.D. University of Michigan, Ann Arbor, 1865, a member of the American Medical Association, and once president of the Calhoun County (Mich.) Medical Society, died at his home in Marshall, after an illness of five months, aged 62.

John J. Taylor, M.D., for fourteen years secretary of the La Salle County Medical Society, and once president of the North Central Illinois Medical Association, died at his home in Streator, Ill., August 3, from cancer of the stomach.

James R. Gregory, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1887, Long Point, Ill., died at Las Vegas, N. M., where he had gone in the hope of improving his health, August 1, from consumption, aged about 40.

William V. Tolley, M.D. Central College of Physicians and Surgeons, Indianapolis, 1881, of Indianapolis, died at the isolation hospital in that city from smallpox, July 25, after an illness of several weeks, aged 67.

John E. Sutcliffe, M.D. Bellevue Hospital Medical College, New York, a resident of Louisville, who retired from practice in 1845, on account of defective vision, died at his home in Louisville, July 24, aged 83.

Delos W. Hoskins, M.D. New York Homeopathic Medical College and Hospital, 1895, formerly of Auburn, N. Y., died from consumption at Le Grand, Cal., in July, after an illness of four years.

Joseph Smith Carter, M.D. Ohio Medical College, Cincinnati, 1850, who retired from practice twenty years later on account of ill health, died at his home in Urbana, Ohio, July 27, aged 78.

John Henry Helfrich, M.D. Pennsylvania Medical College, Philadelphia, 1861, died at his home in Allentown, Pa., July 29, from Bright's disease after an illness of six months, aged 83.

Edwin Garrett Hank, M.D. University College of Medicine, Richmond, Va., 1898, died at his home in Tannerscreek, Va., from the effects of the kick of a horse, July 26, aged 27.

Albert Jeremiah Schureman, M.D. New York University, 1872, of Newark, N. J., died at the home of his brother in that city, July 28, after an invalidism of ten years, aged 74.

Amos C. Erskine, M.D. Central College of Physicians and Surgeons, Indianapolis, 1880, died at his home in Indianapolis, July 23, from tuberculosis, after a long illness, aged 55.

Milo Hotchkiss Jones, M.D. Yale University, New Haven, Conn., 1896, died at his home in Greenwich, Conn., from typhoid fever after an illness of one week, July 27, aged 28.

Walter D. Anderson, M.D. Harvard University Medical School, Boston, 1864, president of the local board of health, died at his home in Vallejo, Cal., July 31.

William E. Forest, M.D. New York University, 1876, formerly of New York City, was drowned at Rockaway Beach, July 28, while bathing, at the age of 53.

John C. Luke, M.D. Cleveland Medical College, 1871, for several years postmaster at South Fork, Pa., died at his home in that place, August 2, aged 70.

William Craig, M.D. University of Pennsylvania, Philadelphia, 1871, died suddenly at his home in Mentone, Cal., July 25, from hemorrhage, aged 83.

William H. Coyle, M.D. Cleveland Medical College, 1869, died suddenly at his home in Columbia City, Ind., July 29, from apoplexy, aged 68.

Benjamin Hawker, M.D. Eclectic Medical College of the city of New York, 1875, died at his home in New York City from diabetes, July 31.

Samuel W. Hoover, M.D. University of Michigan, Ann Arbor, 1885, of Fayette, Ohio, died suddenly, July 18, from paralysis, aged 46.

James D. Donnelly, M.D., 1848, died at his home in Mountain City, Tenn., June 18, after an illness of two years and a half, aged 79.

William M. Mercer, M.D. University of Buffalo, 1872, died at his home in Corunna, Ind., July 24, aged 75.

State Boards of Registration.

Pennsylvania Summary.—Of the 392 candidates who recently took the examination before the Pennsylvania State Board of Medical Examiners, 339 were successful, 50 failed to secure the necessary 75 per cent., 1 was expelled for cheating, and 2 withdrew because of illness.

Utah Report.—Dr. R. W. Fisher, secretary of the Utah State Board of Medical Examiners, reports that a written examination was held at Salt Lake City, July 6 and 7, 1903, at which the number of subjects was 10; questions, 80; percentage required to pass, 75; total number examined, 7; all of whom passed.

Candidate.	Sch. of Pract.	College.	Year Grad.	Per Cent.
1	R.	Coll. of Phys. and Surgs., Baltimore	1903	84 6 7
4	R.	Coll. of Phys. and Surgs., Chicago..	1903	75 1 7
2	R.	Medico-Chirurg. Coll., Kansas City.	1903	84 1 7
3	R.	Rush Medical College, Chicago.....	1903	80 6 7
5	R.	Jefferson Med. College, Philadelphia	1897	85
6	R.	University and Bellevue Hospital Medical College, New York.....	1903	88
7	R.	Barnes Med. College, St. Louis....	1901	81 3 7

Rhode Island Report.—Dr. Gardner T. Swarts, secretary of the Rhode Island State Board of Health, reports the written examination held at Providence, July 2 and 3, 1903, as follows: Number of subjects examined in, 7; total number of questions, 70; percentage required to pass, 75; total number examined, 27; number passed, 20; number failed, 7.

PASSED.

Candidate.	Sch. of Pract.	College.	Year Grad.	Per Cent.
217	R.	Syracuse University, Medical Dept..	1902	76.9
218	R.	University and Bellevue Med. College	1901	83.5
221	R.	University of the South, Med. Dept..	1903	74.4
222	R.	Univ. of Pennsylvania, Medical Dept.	1903	81.6
225	R.	University of Vermont, Medical Dept.	1898	77.9
238	R.	University of Vermont, Medical Dept.	1898	79.6
219	R.	Harvard University, Medical Dept..	1902	80.7
224	R.	Harvard University, Medical Dept..	1902	77.9
226	R.	Harvard University, Medical Dept..	*	76.1
243	R.	Harvard University, Medical Dept..	1903	84.5
236	R.	Harvard University, Medical Dept..	1901	88.3
227	R.	Coll. of Phys. and Surgs., Baltimore.	1903	85
242	R.	Coll. of Phys. and Surgs., New York.	1903	80 3
228	R.	Detroit College of Medicine and Surg.	1903	78.1
229	R.	Laval University, Medical Dept.....	1903	75.1
230	R.	Jefferson Medical College.....	1903	82
231	R.	Jefferson Medical College.....	1903	78.6
237	R.	Jefferson Medical College.....	1903	82.6
232	R.	Bowdoin Medical College.....	1902	76.5
233	R.	Cornell Medical College.....	1903	86.1

FAILED.

220	R.	University of Naples.....	1899	66
234	R.	University of Naples.....	1899	63.4
223	R.	Baltimore Medical College.....	1903	71.9
241	R.	Baltimore Medical College.....	1903	72.7
235	R.	Illinois Medical College.....	1902	73.5
239	R.	Victoria University, Medical Dept...	1884	69.4
240	R.	Jefferson Medical College.....	1903	71.9

* Undergraduate, third year.

Delaware Report.—Dr. P. W. Tomlinson, Wilmington, secretary of the Medical Council of Delaware, reports for the medical examining board representing the Medical Society of Delaware, that a written examination was held at Dover, June 16 to 18, 1903, at which the number of subjects examined in was 10; total questions, 90; percentage required to pass, 75; total number examined, 7; number passed, 3; number failed, 4.

PASSED.

Candidate.	Sch. of Pract.	College.	Year Grad.	Per Cent.
136	R.	Woman's Medical College, Baltimore.	1902	84.6
137	R.	Medico-Chirurgical College, Baltimore	1903	79.2
135	R.	Baltimore Medical College.....	1903	80.8

FAILED.

133	R.	Baltimore Univ. School of Medicine..	1903	68.4
132	R.	Maryland Medical College.....	1903	68
134	R.	Maryland Medical College.....	1902	64
131	R.	Jefferson Med. College, Philadelphia.	1902	69.6

South Dakota Report.—Dr. H. E. McNutt, Aberdeen, reports for the South Dakota Board of Medical Examiners, that a written examination was held at Sioux Falls, July 8 to 10, 1903, at which the number of subjects examined in was 10; total questions, 80; percentage required to pass, 75; total number examined, 20; number passed, 17; number failed, 3.

PASSED.

Candidate.	Sch. of Pract.	College.	Year Grad.	Per Cent.
1	R.	Rush Medical College, Chicago.....	1901	87
2	R.	Rush Medical College, Chicago.....	1903	97
3	R.	Rush Medical College, Chicago.....	1888	79
4	R.	Rush Medical College, Chicago.....	1901	80
5	R.	University of Minnesota.....	1903	93
6	R.	University of the City of New York...	1892	80
8	R.	University of Missouri.....	1903	85
16	R.	University of Nebraska, Omaha.....	1903	85
7	R.	Coll. of Phys. and Surgs., New York City	1894	83
9	R.	College of Phys. and Surgs., Chicago..	1903	87
10	R.	Louisville Medical College, Kentucky..	1890	89
11	R.	Johns Hopkins University.....	1903	90
12	R.	Northwestern Univ. Med. Schl., Chicago	1903	95
13	R.	Northwestern Univ. Med. Schl., Chicago	1903	86
14	R.	Jefferson Medical College, Philadelphia.	1903	85
15	R.	Sioux City College of Medicine.....	1903	78
17	E.	Lincoln (Neb.) Medical College.....	1903	88

FAILED.

18	R.	Omaha Medical College.....	1899	..
19	R.	Sioux City College of Medicine.....	1903	..
20	R.	Medical College of Alabama.....	1884	..

EXAMINATION QUESTIONS.

Lists of Questions Asked at State Board Examinations.

We give below the questions asked by the Ohio State Board of Medical Registration and Examination at Columbus, June 23-25, 1903. The record of the students in this trial was given in THE JOURNAL, August 8.

Hereafter, as space will permit, we shall occasionally publish the questions of different state examining boards.

ANATOMY.

1. Describe the clavicle and scapula. 2. Describe the sacrum and coccyx. 3. Describe and illustrate the different classes of articulations. 4. Describe the hip joint, its ligaments and its synovial membrane. 5. Name and give origin of the muscles of the posterior tibial region (superficial group). 6. Name and give origin of the muscle of the anterfor scapular region. 7. Give the origin and distribution of the ulnar artery. 8. Describe the deep veins of the lower extremity. 9. Describe the cecum. 10. Describe the pleura.

PHYSICAL DIAGNOSIS.

1. Give the signs of aortic valvular obstruction, with hypertrophy of the left ventricle. 2. How determine whether a cardiac murmur occurs with the first or second sound of the heart? 3. Differentiate between a pleuritic and a pericardial friction sound. 4. Differentiate between a pericardial effusion and a pleural effusion on the left side. 5. By what signs may ascites arising from disease of the kidneys be distinguished from that due to disease of the heart or liver? 6. Differentiate paralysis of the facial nerve due to a central lesion from one due to a peripheral lesion. 7. Make a differential diagnosis of tumor of the right kidney from tumor of the liver. 8. What would you elicit in an examination of the chest of a patient with advanced phthisis? 9. What are the signs of a dilated stomach? 10. Give the normal boundaries of the liver.

CHEMISTRY.

1. Define chemical incompatibility and give example. 2. Give chemical formula of three acids. 3. Describe "K" and its principal salts. 4. How is a salt formed? 5. Describe "Na" and its principal salts. 6. Differentiate organic and inorganic chemistry and give an example of each. 7. Explain the difference between a carbonate and a bicarbonate. 8. Give formulas and describe calomel and bichlorid. 9. Give tests for acids and alkalies. 10. Give tests for arsenic.

MATERIA MEDICA.

1. Creosote—from what is it obtained? What is its physiologic action? 2. What are the indications for creosote, its doses, and how is it administered? 3. Ipecac—physiologic action, indications and doses. 4. Chloral hydrate—physiologic action, indications and doses. 5. Phenacetin—physiologic action, indications, doses and uses. 6. Oxygen—in what condition and how is it used? 7. Serum therapy—on what scientific principle is it based? 8. Antidiphtheritic serum—how is it obtained and how used? 9. Anesthetics—mention those most generally used, and what are the dangers attending their use? 10. Local anesthesia—how is it produced?

PHYSIOLOGY.

1. In what do physiology and pathology differ? 2. How are the functions of the body classified? 3. Define the digestive process. 4. Describe the portal circulation. 5. What is chyle and how does it differ from lymph? 6. What is the coloring matter of the blood and its function? 7. How does the pneumogastric nerve influence the heart beat? 8. How is the temperature of the body kept at the standard? 9. What are the functions of the skin? 10. State the functions of the first two cranial nerves.

OBSTETRICS.

1. Define natural labor. 2. What precautions should be taken before and during the first examination in labor? 3. How would you manage a case of prolapsed cord? 4. What is dry labor and what are its difficulties and dangers? 5. How would you diagnose and manage a case of placenta previa? 6. Under what circumstances would you use a douche after labor or during the lying-in? 7. Define and describe involution. 8. What are some of the causes of mastitis? How should it be treated? 9. When should the cord be cut, and how dressed? Describe the process. 10. What should be done with a child prematurely born?

SURGERY.

1. Describe the application of the plaster-of-paris jacket. 2. How should fracture of the olecranon be treated? 3. Give causes and symptoms of adenitis. 4. What is saline transfusion and how is it performed? 5. What is asepsis and how would you secure it? 6. Describe the Trendelenburg position and its uses. 7. How would you treat a penerating gunshot wound of the abdomen? 8. How is suprapubic lithotomy performed? 9. What is the difference between true and false ankylosis? 10. What do you understand by intubation, and under what circumstances is it of use?

GYNECOLOGY.

1. Give symptoms, diagnosis, prognosis and treatment of acute metritis. 2. What is chronic endometritis, its causes and treatment? 3. Give etiology, symptoms and diagnosis of carcinoma uteri. 4. Give differential diagnosis of abdominal ascites and large ovarian cysts. 5. Give palliative treatment of retroversion of uterus.

DISEASES OF CHILDREN.

1. Differentiate between varicella and smallpox. 2. Give the technic of vaccination. 3. Differentiate enterocolitis from cholera infantum. 4. Differentiate catarrhal from lobar pneumonia. 5. Symptoms of hydrocephalus.

PRACTICE AND PATHOLOGY.

1. Give four causes of a persistent polyuria, and the results of a urinary examination. 2. Differentiate between gastralgia, gastric ulcer and gastric carcinoma. 3. Outline management of a case of organic cardiac lesion, with lost or broken compensation. 4. Describe the lesion and location in tabes dorsalis, and the signs by which the disease may be recognized. 5. What is ascites? Give causes, differential diagnosis and treatment. 6. What is cystitis? Give symptoms, diagnosis and treatment. 7. How diagnose and treat a case of diphtheria? 8. What does the word dysentery mean? Give symptoms and diagnosis of a case? 9. What do you understand by the terms symptoms, signs and periods of incubation and prodromes of disease? 10. Define erysipelas. Describe its course and give indications for three remedies.

Medical Organization.

Floyd County (Iowa) Medical Society.

Twelve physicians met at Charles City, July 24, and took preliminary steps toward reorganizing along the lines suggested by the American Medical Association. Dr. Semun R. Hewett acted as chairman and Dr. James J. Daly, as secretary, both of Charles City.

Audubon County (Iowa) Medical Society.

The physicians of Audubon County met in Audubon, July 21, organized a county medical society, adopted the constitution and by-laws recommended by the American Medical Association, and elected the following officers: Dr. H. P. Lauritzen, Exira, president; Dr. Ratford F. Childs, Audubon, vice-president; Dr. Daniel Jackson, Audubon, secretary-treasurer, and Drs. A. L. Brooks, Audubon, Nathaniel L. A. K. Slamberg, Kimballton, and Daniel G. Loss, censors.

Waupaca County (Wis.) Medical Society.

Physicians of Waupaca County met at Waupaca, July 28, with Dr. John F. Pritchard, Manitowoc, councilor for the Eighth District, aand organized a county society to be in affiliation with the state and National organizations. The following officers were elected: Dr. Levi H. Pelton, Waupaca, president; Dr. Thomas W. Trimble, Waupaca, vice-president; Dr. J. Fremont Corbett, Weyauwega, secretary-treasurer, and Drs. Bruno G. Jurgensohn, Manawa, J. Fremont Corbett, Weyauwega, and Carl A. Sander, Waupaca, censors.

MEDICAL SCHOOLS OF THE UNITED STATES.

Below is given a brief description of every college in the United States that is legally chartered to confer the degree of doctor of medicine, and whose diploma is recognized by at least one state licensing board. The list includes the sectarian as well as the regular colleges, as their graduates are physicians in the eyes of the law. The information given is, as a rule, obtained from the catalogues and has been submitted to the dean of each school for his inspection and approval. Colleges which belong to the American or the Southern Medical College Association or other organization of colleges have requirements for admission of students according to the rules of these associations, unless their requirements are higher, in which case a statement is made to that effect. Extracts from these rules are given at the close of the list of colleges.

ALABAMA.

Alabama, population 1,828, 697, has two medical colleges, the Medical College of Alabama and the Birmingham Medical College, located in Mobile and in Birmingham. The population of each city is over 38,000 and board and room may be obtained for from $12 to $20 per month.

Mobile.

MEDICAL COLLEGE OF ALABAMA.—This is the Medical Department of the University of Alabama, organized in 1859. The City Hospital furnishes free clinical material. The faculty consists of 9 professors and 9 lecturers, 18 in all. It is well equipped with buildings, laboratories, dispensary, etc. It is a member of the Southern Medical College Association. The course of study covers four years of six months each. The total fees for each of the first three years is $100; for the fourth year, $125. The Dean is Dr. George E. Ketchum. Total registration, 1902-3, 145; graduates, 12. The thirty-eighth session will begin Oct. 8, 1903, and will close April, 1904.

Birmingham.

BIRMINGHAM MEDICAL COLLEGE.—This school was incorporated in 1894 and is situated in Birmingham, a manufacturing town of 38,415. The clinical advantages are good. The Hillman, St. Vincent's, Pratt and County hospitals are accessible to the students. The laboratories are well equipped. There are 19 professors and 13 assistants, total, 32. The school is a member of the Southern Medical College Association. The course of instruction embraces four separate sessions of six months each. The fees are $75 for each of the first three years and $105 for the fourth. The Dean is Dr. B. L. Wyman. Registration, 1902-3, 94; graduates, 22. Next session opens Oct. 1, 1903, and closes April 1, 1904.

ARKANSAS.

Arkansas, population 1,311,564, has one medical college, located in Little Rock. Board and lodging costs from $13 to $18 per month.

Little Rock.

MEDICAL DEPARTMENT OF THE ARKANSAS UNIVERSITY.—This college is located at Little Rock, population about 60,000. It was organized in 1880 as the Arkansas Industrial University Medical Department. It is a charter member of the Association of American Medical Colleges. Hospital facilities are furnished by Logan H. Roots Memorial Hospital, St. Vincent's Infirmary and Pulaski County Hospital, the latter having a capacity of 200 beds. The teaching body consists of 13 professors and 23 lecturers and assistants, total 36. Dr. F. L. French, Little Rock, is Secretary. The fees are: Matriculation $5, paid but once; annual fees $60, and graduation $25. Total number of students at last session, 236; graduates, 12. The next course of lectures begins Oct. 19, 1903, and ends April 19, 1904.

CALIFORNIA.

California, population 1,485,053, has seven medical colleges. Five are located in San Francisco, a city of about 400,000 inhabitants. They are Cooper Medical College, Medical Department of the University of California, California Medical College, Hahnemann Medical College of the Pacific, and the College of Physicians and Surgeons. The clinical facilities of San Francisco are good; board and lodging can be obtained for from $20 to $30 a month. The College of Medicine of the University of Southern California is situated in Los Angeles, population 102,479. Board and lodging can be obtained in that city for $4 a week and upward. The Oakland College of Medicine and Surgery is in Oakland, a suburb of San Francisco.

San Francisco.

COOPER MEDICAL COLLEGE.—This school was organized in 1858, though its present name was not adopted until 1882. The faculty consists of 12 professors and 28 lecturers, instructors, etc., 40 in all. Lane Hospital, adjoining the college, the City and County Hospital, containing 464 beds, and the college dispensary furnish clinical material. The requirements for admission are a certificate showing that applicant has passed the regular examination for admission to the University of California, or its equivalent, or graduation from an accredited high school or academy, or its equivalent. The college itself does not hold entrance examinations. The college building supplies large laboratory and lecture-room facilities. The curriculum covers a graded course of four years of eight months each. Fees: Matriculation, $5; course fee for each year, $150; breakage deposit each year, $10; graduation fee, $25; no other charges. The Dean is Dr. Henry Gibbons, Jr. Total registration for 1902-3 was 212; graduates, 45. The next session opens Aug. 15, 1903, and will close April 26, 1904.

MEDICAL DEPARTMENT UNIVERSITY OF CALIFORNIA.—This department of the State University was organized in 1872, and has a faculty composed of 20 professors, 50 associates and assistants, a total of 70. The City and County Hospital, which admits students of this school not only to the clinics proper, but also to its wards for study, and the college dispensary furnish good clinical material. The course covers graded work for four years of nine months each. This school is a member of the Associatioon of American Medical Colleges. In 1905 two full college years' work will be required of all applicants for admission. The fees are: Matriculation, $5; tuition, $150 each year; laboratory fees extra. The Dean is Dr. Arnold A. D'Ancona. Total registration for 1902-3 was 115; graduates, 26. The thirty-first session opens Aug. 7, 1903, and will close May 14, 1904.

COLLEGE OF PHYSICIANS AND SURGEONS OF SAN FRANCISCO.—This school was organized in 1896 and has a faculty of 23 professors and 23 associate professors and teachers, a total of 46. The hospital facilities consist of the City and County Hospital, the California General Hospital, with 50 beds, and St. Winifred Hospital, with 50 beds. The daily clinics at the new college building furnish abundant material of every description. Applicants for matriculation must show an equal amount of work done or pass a satisfactory examination in English, history and government, geography, physics, mathematics and Latin, grammar and translation. The college building recently completed is well supplied with laboratories and lecture rooms. This college now conducts a continuous course of medical instruction. Each year is divided into four quarters of three months each, and known as the autumn, winter, spring and summer quarters. Students may enter at the beginning of any quarter. Attendance on 12 quarters will be required, and at least 45 months must elapse between the beginning of the first course and the time of graduation. Fees, $30 per quarter. The Dean is Dr. D. A. Hodghead. Registration for 1902-3 was 146, of these 28 graduated in medicine. The autumn quarter opens Sept. 1, 1903, and closes May, 1904.

CALIFORNIA MEDICAL COLLEGE.—Eclectic. This school was organized in 1878. Its faculty includes 14 professors and 14 lecturers and instructors, a total of 28. The clinical material is supplied by the Buena Vista and City and County hospitals. Applicants for admission not holding diploma or certificate are examined. The course has been extended to cover four years of eight months each. Total fees are about $110 for each of the first three years and $40 for the fourth year. The Dean is Dr. Maclean. Total registration for 1902-3 was 60; graduates, 7.

HAHNEMANN MEDICAL COLLEGE OF THE PACIFIC.—Homeopathic. This was organized in 1884, and has a faculty of 19 professors and 23 lecturers, instructors, etc., in all 42. The Pacific Homeopathic Polyclinic, the Homeopathic Sanatorium, the San Francisco Nursery for Homeless Children, Marie Kip Orphanage, accommodating, respectively, 45, 75 and 120 beds; Fabiola Hospital and the City and County Hospital, furnish the clinical material for study. Matriculants must possess the equivalent of a high school education. One year after entrance is permitted in which the student may complete conditions in Latin. The college is registered and accredited with New York State Regents. The course includes four years of seven months each. Total fees for the first year, $155, and $100 for each of the other three years. The Dean is Dr. James W. Ward. Total registration for 1902-3 was 38; graduates, 12. The twenty-first session opened March 6, 1903, and will close Oct. 31, 1903.

Oakland.

OAKLAND COLLEGE OF MEDICINE AND SURGERY.—The second session of this new school will begin Sept. 1, 1903, and end April 30, 1904. The Registrar is Dr. Edward N. Ewer. The faculty numbers 21. Tuition is about $115 yearly. There were 6 students last session, all in the freshman class.

Los Angeles.

COLLEGE OF MEDICINE, UNIVERSITY OF SOUTHERN CALIFORNIA.—This school was organized in 1885, and has a faculty of 27 professors and 7 instructors, etc., 34 in all. The County Hospital, having 200 beds, and a college dispensary furnish clinical material. Applicants for admission are required to pass an examination in English, arithmetic, elementary algebra, physics and Latin equal to one year's work, unless they can show by certificate that they have covered that ground. The building is amply provided with laboratories and lecture rooms. A graded course, covering four years of thirty-two weeks each, is offered. The total fees for the first year are $145; second and third, $130 each, and $40 for the fourth year. The Dean is Dr. James H. McBride. Total registration for 1902-3 was 106; graduates, 27. The next session opens October, 1903, and closes June, 1904.

COLORADO.

Colorado, with a population of 539,700, has three medical colleges. Two of these, Denver and Gross College of Medicine and Denver Homeopathic College, are in Denver, which has a population of about 175,000, the other, the Colorado School of Medicine, is at Boulder (population 6,150). The clinical facilities in Denver available to the two colleges are the Arapahoe County Hospital, which has a capacity of 225 beds; St. Joseph's

Hospital, with 200 beds, and St. Luke's Hospital, with 75 beds. The Public Library contains 10,000 volumes on medicine. Board can be obtained in Denver for $5 a week and upward.

Denver.

THE DENVER AND GROSS COLLEGE OF MEDICINE.—This is the Medical Department of the University of Denver, and was organized in 1902 by the union of the Gross Medical College (organized 1887) and the Denver College of Medicine (organized 1880). The clinical advantages are the college dispensary, the Arapahoe County Hospital, St. Luke's Hospital, St. Anthony's Hospital, St. Joseph's Hospital, National Jewish Hospital for Consumptives, Home for Dependent Children and the City Contagious Hospital and Mercy Sanitarium. The faculty is made up of 38 professors, 45 assistants and instructors, a total of 83. Its location is central and the buildings are well arranged for laboratory, dispensary and didactic work. The course is graded and covers four years of eight months. The college is a member of the Association of American Medical Colleges. Final examinations at the end of each year are held. Fees for the first year are $115. For the second year $116. Third year $101. Fourth year $126. Total registration, 1902-3, 130; graduates, 33. The twenty-third session will begin Sept. 15, 1903, and close May 16, 1904. The Dean is Dr. S. G. Bonney.

DENVER HOMEOPATHIC COLLEGE.—This college, organized in 1894, beside clinical privileges in the Arapahoe County Hospital, has exclusive privileges for clinical work in the Denver Homeopathic Hospital, the Haven and the Belle Lenox Nursery. The faculty numbers 25 professors and 7 lecturers and instructors, 32 in all. The requirements for admission are, "possession of a diploma from a literary college, university, an academy, a normal or high school; a first-grade teacher's certificate, or a previous matriculation at some reputable literary or medical college." The course of study consists of four years of seven months each; monthly examinations are held in each subject. A five-year scholarship may be had for $300, payable in advance, otherwise the tuition is $100 a year; there is a matriculation fee of $5, payable once. The Dean is Dr. James P. Willard. Total registration for 1902-3 was 29; the number of graduates, 6. The ninth session begins in September, 1903, and will close April, 1904.

Boulder.

COLORADO SCHOOL OF MEDICINE.—This is the Medical Department of the University of Colorado, and was opened in 1883. The University Hospital, under the control of the state, is equipped to accommodate 40 patients and furnishes free clinical material. Both hospital and dispensary clinics are offered and the sanatorium located in Boulder offers additional advantages in this line. The faculty embraces 15 professors and 12 lecturers and assistants, a total of 27. The laboratories are well equipped and commodious. A separate building is devoted to the study of anatomy and another one is used for medical work exclusively. A complete four-year course of study in a recognized high school, or its equivalent, is required for admission. This school is a member of the Association of American Medical Colleges. The work embraces a graded course of four years of nine months each. The tuition is $50 per year; there are no other fees. The Dean is Dr. Luman M. Giffin. Total registration for 1902-3 was 63; graduates, 8. The twenty-second session begins Sept. 14, 1903, and closes June, 1904.

CONNECTICUT.

Connecticut has a population of 908,420, and contains one medical college, located in New Haven, population 115,000. Board and lodging cost $4.50 and upward per week.

New Haven.

YALE MEDICAL SCHOOL.—This is the Department of Medicine of Yale University. In 1810 a charter was granted for the establishment of this school, and in 1813 it was organized as the Medical Institution of Yale College. In 1879 a new charter changed the name to the one now used, and in 1884 the Connecticut Medical Society, which, from the granting of the first charter, had taken an active part in its control, released itself from a further responsibility and the University authorities assumed full control. The clinical advantages are embraced under the New Haven Hospital, which contains 150 beds and is the general hospital for New Haven; the Springside Hospital, which is connected with the city almshouse, and the State Hospital for the Insane, which, with its 1,800 patients, offers an opportunity for special instruction in insanity in addition to the clinics. Besides these, the University has just completed a $100,000 building for the dispensary service, which offers good material for clinical teaching. The faculty embraces 13 professors, 5 lecturers, 12 instructors, and 22 assistants, a total of 52. The lecture rooms and laboratories are large and well equipped. Matriculants are admitted without examination, provided that they have received a degree in arts or sciences, that they present certificates showing that they have successfully prosecuted the subjects of the examination at some college, high school, academy, or preparatory school approved by the faculty, or that they have passed matriculation examinations equivalent to those required, at some approved professional school. This school is a member of the Association of American Medical Colleges. The course covers a four-year graded curriculum, eight months constituting a school year; the first two years the fundamental branches are studied, the third year is devoted to a systematic teaching of medicine, surgery, obstetrics and pharmacology, and in the fourth year clinical work, with medicine, surgery and the specialties, is presented. The fees are $150 each year; in the first year there are additional fees amounting to $18, and in the second, $8, and there is a graduation fee of $10. The Dean is Dr. Herbert E. Smith, New Haven. During the session of 1902-3 there were 145 matriculants and 27 graduates. The ninety-first session opens Sept. 24, 1903, and closes June 23, 1904.

DISTRICT OF COLUMBIA.

Washington, population, 278,718, has four medical colleges: Medical Department of Columbian University, Georgetown University School of Medicine, Howard University Medical Department and National University Medical Department. Washington offers to the student of medicine many advantages. The Army Medical Museum, the Museum of Hygiene, the National Museum, the library in the Surgeon-General's office, the Toner Medical Library and Museum of Hygiene, in all over 125,000 volumes on medicine, open to the medical student a most profitable field. The clinical advantages offered by the various hospitals are good. Owing to the many boarding houses and hotels, board and lodging can be had at extremely reasonable rates.

Washington.

COLUMBIAN UNIVERSITY, DEPARTMENT OF MEDICINE.—This school was organized in 1821. Columbian University Hospital, under the immediate control of the faculty, gives the students of this school exclusive clinical advantages. In addition, Central Dispensary and Emergency Hospital, Lutheran Eye and Ear Infirmary, Episcopal, Garfield, Children's, Providence, Columbia and St. Elizabeth's hospitals, all permit of abundant opportunity for clinics and clinical material. The faculty is composed of 26 professors and 30 demonstrators and assistants, 56 in all. This school is a member of the Association of American Medical Colleges. The equipment and facilities for laboratory, didactic and clinical work are good. The completion of graded work covering the period of four years, eight months to the school year, is required; semi-annual examinations are held. Total fees for each year are $110. The Dean is Dr. E. A. de Schweinitz, 1325 H St., N. W. New and enlarged buildings for both college and hospital have been completed. Registration for 1902-3 was 260; graduates, 34. The eighty-second session begins Sept. 30, 1903, and closes June 1, 1904.

GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE.—This school, organized in 1850, controls the Georgetown University Hospital, which affords excellent facilities for clinical teaching and ward classes. Clinics are also held for the benefit of the students in Providence Hospital, containing 300 beds; in the Children's Hospital, the Central Dispensary, Emergency Hospital and the Garfield Hospital. Attendance on clinical instruction is obligatory in the third and fourth years. The faculty contains 26 professors, 27 instructors and assistants, total 53. This school is a member of the Association of American Medical Colleges. The building is conveniently located and contains spacious and well-ventilated lecture rooms, laboratories and library; the laboratories are equipped with the most approved instruments and appliances. The complete course of study extends over four terms of eight months each. Examinations are held at the end of each session. The fees are $110 each year. The Dean is Dr. George M. Kober, 1600 T St. The registration for 1902-3 was 144; graduates, 22. The next term opens on Sept. 29, 1903, and ends May 31, 1904.

HOWARD UNIVERSITY MEDICAL DEPARTMENT.—This institution was organized in 1867 and "in conformity with the spirit of the organic law of the University, is open to all, without regard to sex or race, who are qualified by good moral character, proper age and suitable education." The removal of any racial distinction has been taken advantage of by colored students, who compose a majority of those in attendance, but a number of white students are also receiving instruction. The Freedman's Hospital and Asylum is a general hospital of 300 beds. The faculty comprises 15 professors and 20 lecturers and assistants, 35 in all. This college is a member of the Association of American Medical Colleges. Students are required to attend four courses of lectures in separate years of seven months each. The fees of each session are $80, plus $2 per part for dissecting material. Board can be had at the school dining hall for $9 a month, and a room in the dormitory for $15 a term. The Dean is Dr. Robert Reyburn, 714 13th St. N. W. Registration for 1902-3 was 141; graduates, 29. The thirty-sixth session begins Oct. 1, 1903, and closes May, 1904.

NATIONAL UNIVERSITY MEDICAL DEPARTMENT.—We are unable to furnish information concerning this school, as repeated letters to different officials have failed to elicit any reply. In our statistical table we use the same figures as were used last year, assuming that they are approximately correct. The school was organized in 1884 and has a faculty of about 37. The course consists of four years of eight months each.

GEORGIA.

Georgia, population 2,216,331, has three medical colleges: Medical College of Georgia, located in Augusta (population, 39,441); Atlanta College of Physicians and Surgeons, and Georgia College of Eclectic Medicine and Surgery, both in Atlanta (a manufacturing city of 89,872 population). Board and lodging may be obtained for from $3 to $5 per week.

Augusta.

MEDICAL COLLEGE OF GEORGIA.—This school was organized as a medical academy in 1829, and in 1873 was made the Medical Department of the University of Georgia. Its faculty includes 12 professors and 12 assistants, 24 in all. The course is four years of six months each. Applicants for admission must, by examination, certificate or diploma, show that they possess educational qualifications equal to those required for second grade teachers in public schools; if they are deficient on examination, however, they are admitted, and they may remove the conditions any time before they appear for graduation. The City Hospital, with 130 beds; Lamar Hospital, with 80 beds; the Polyclinic and the Hospital for Contagious Diseases supply clinical material. Fees for the first two years are $75 each; third year, $100, and 130 for the last year. The Dean is Dr. DeSaussure Ford. Total enrolment for 1902-3 was 110; graduates, 7. The seventy-second session opens Oct. 1, 1903, and closes April, 1904.

Atlanta.

GEORGIA COLLEGE OF ECLECTIC MEDICINE AND SURGERY.—This was organized in 1839, and has a faculty of 12. The college dispensary and Grady Hospital furnish clinical material. Applicants for admission must adhere to the requirements established by the

National Confederation of Eclectic Colleges of which this college is a member. The curriculum covers four years of six months each. The Proctor is Dr. W. M. Durham, 77½ Peachtree St. Total number of students for 1902-3 was 46; graduates, 2. The next session opens Oct. 1, 1903, and closes April 1, 1904.

ATLANTA COLLEGE OF PHYSICIANS AND SURGEONS.—This school was formed in 1898 by the consolidation of the Atlanta Medical College, organized in 1854, with the Southern Medical College, organized in 1879. It has a faculty of 14 professors and 20 assistants, a total of 28. Clinical facilities are furnished by the Grady Hospital, which is the general hospital for Atlanta; clinics are free to the graduating class. First course students are required to "give satisfactory evidence to the faculty of such educational qualifications as will be deemed necessary for the successful prosecution of their medical studies. These requirements will be similar to those of other reputable medical colleges in the country." The course of study covers four years of six months each and is graded. The buildings are large and a new building for practical anatomy has just been added. Fees: First and second years, $75 each; third and fourth, $100 each. The Dean is Dr. W. S. Kendrick, 71 Washington St. Total registration of students for 1902-3 was 200; graduates, 34. Next session begins Oct. 1, 1903, and closes April, 1904.

ILLINOIS.

Illinois, population 4,821,550, has 14 medical colleges. They are all located in Chicago, a city of about 1,900,000 inhabitants, and are as follows: Rush Medical College, Northwestern University Medical School, Hahnemann Medical College, Bennett College of Eclectic Medicine and Surgery, Chicago Homeopathic Medical College, College of Physicians and Surgeons, Hering Medical College, Jenner Medical College, Harvey Medical College, Illinois Medical College, American Medical Missionary College, College of Medicine and Surgery, National Medical University and American College of Medicine and Surgery. Room and board cost $3 a week and upward.

Colleges in Illinois have to admit students in conformity with the minimum requirements of the Illinois State Board of Health, as follows: "A diploma or certificate of graduation from a high school; or a certificate signed by a principal of a regularly organized high school or by the examiner of the faculty of a recognized literary or scientific college or university, or by the state superintendent of public instruction, or a superintendent of public schools, of having successfully passed an examination in all the several branches embraced in the curriculum of a four years' high school course. The matriculation examination shall not be conducted by any member of the faculty of the medical college. The Illinois State Board of Health will require each applicant for a state certificate to present documentary evidence of his preliminary education, together with his medical diploma, when taking the examination of the board." These conditions will govern all persons admitted to the freshman year on or after Jan. 1, 1903.

Chicago.

RUSH MEDICAL COLLEGE.—This school was founded in 1837, organized in 1843, was the medical department of Lake Forest University from 1887 to 1898, and in the latter year became affiliated with the University of Chicago. The faculty is composed of 22 professors, 144 associates, instructors, etc., a total of 166. Good clinical facilities are furnished by Cook County Hospital, caring for about 20,000 patients yearly; Presbyterian Hospital, with 250 beds; a college dispensary, and an obstetric department. In addition to these, extramural clinical courses are offered at the West Side Hebrew Dispensary, St. Luke's Hospital, St. Anthony's Hospital, the Alexian Brothers' Hospital, Illinois Charitable Eye and Ear Infirmary and Chicago Isolation Hospital. Bedside instruction is given. The requirements for admission are those of admission to the better universities or colleges and, in addition thereto, one and one-third years of college work. For the sessions of 1904 there will be required a certificate of admission to the third academic year of an accredited university. By the addition of a recently completed seven-story building, the facilities for clinical instructions are largely increased. The laboratories and their equipment are unexcelled. The curriculum covers graded work for four years of three quarters each, a quarter being three months. A continuous session is held, but credit for more than three quarters can not be obtained in any calendar year. A combined course for six years confers degrees of both science and medicine. All freshmen and sophomore studies are given at the University of Chicago. The total regular fees are $172.50 this year, but it is designed to gradually increase the fees to $200 per year. However, students in continuous attendance, i. e., three quarters in twelve months, may complete their course by paying the fees in vogue when they first enter the college. A matriculation fee of $5 is paid but once, and there are incidentals amounting to from $2 to $5 annually. The Deans are Dr. Frank Billings, 100 State St., and Dr. John M. Dodson, 34 Washington St. Total registration, 1902-3, was 1,047; graduates, 220. The fiscal year begins July 1; final examinations are held at the end of each year.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL.—This school was organized in 1859 as the Medical Department of Lind University, became independent as the Chicago Medical College in 1864, and in 1869 assumed its present relation as Medical Department of Northwestern University. The faculty comprises 41 professors and 67 assistants and instructors, in all, 108. The newly completed Wesley Hospital, with 225 beds; Mercy Hospital, containing 400 beds; Provident Hospital, 100 beds; St. Luke's, 200 beds, and a college free dispensary furnish opportunities for clinical study to students of this college exclusively. Cook County, and the Chicago Lying-in hospitals are also open to them for study. Applicants for admission must, by diploma, certificate or examination, show possession of the educational acquirements required to enter the College of Liberal Arts of Northwestern University. This school is a member of the Association of American Medical Colleges. The laboratory and lecture-room facilities are ample and the equipment is good. The course of study covers graded work for four years of thirty-six weeks each. Optional summer laboratory and clinical courses are also given. Final examinations are held at the end of each semester. The fees for each year are $165 and a matriculation fee of $5, paid once, is charged. The Dean is Dr. N. S. Davis, Jr., 65 Randolph St. The total registration for 1902-3 was 608; graduates, 127. The next session opens October, 1903, and closes June, 1904.

COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1881, and in 1896 became the Medical Department of the University of Illinois. The faculty is composed of 43 professors, 90 assistants and instructors, a total of 133. The West Side Hospital, containing 125 beds; Cook County Hospital, and a college dispensary and maternity clinic supply most of the clinical material, but under certain conditions students of this school are admitted to the following hospitals for clinical study: Augustana, Baptist, Chicago, Woman's, Samaritan, Alexian Brothers', St. Mary's, and the Chicago Lying-in. This school is a member of the Association of American Medical Colleges. A magnificent building has recently been added to the college, and the laboratory, amphitheater and lecture-room space and equipment are excellent. The collegiate year is divided into two terms: the winter term of thirty-two weeks and the summer term of twelve weeks, of actual teaching. Attendance on the winter term is required in order to secure credit for a year's work, and attendance on four winter terms is required for graduation, except for students who are admitted to advanced standing. Attendance on the summer term is optional, and the work is supplementary to the work of the winter term. Students may obtain credit for work done in certain branches, but attendance on this term does not apply on the required thirty-two months' attendance necessary for graduation. The fees are $145 each for the first two years, $130 for the third and $155 for the fourth year. The Dean is Dr. William E. Quine, 103 State St. Total registration for 1902-3 was 685; graduates, 216. The fall term begins Oct. 1, 1903.

HAHNEMANN MEDICAL COLLEGE.—Homeopathic. This was organized in 1855, and has a faculty of 60. Hahnemann Hospital and a college dispensary supply clinical material. The requirements for admission are a high school diploma or its equivalent. The course is four years of seven months each. Fees: Matriculation, paid once, $5; each term, $50, and hospital tickets, $5 each for third and fourth years. The Registrar is Dr. W. Henry Wilson. Total registration, 1902-3, 195; graduates, 69. The next session begins Sept. 27, 1903.

BENNETT COLLEGE OF ECLECTIC MEDICINE AND SURGERY.—This school, organized in 1868, has a faculty of 32 professors and 5 assistants, 37 in all. The Bennett, Cook County and Baptist hospitals and a college dispensary supply clinical facilities. Matriculants must present a diploma or certificate or pass a satisfactory examination "in conformity with the minimum requirements of the State Board of Health." The course covers four years of twenty-six weeks each. This school is a member of the National Confederation of Eclectic Medical Colleges. Fees for each year are $100, with a matriculation fee, paid once, of $5. The Dean is Dr. A. L. Clark, Elgin, Ill. Total registration, 1902-3, was 113; graduates, 18. The thirty-sixth session begins Sept. 22, 1903, and ends May 11, 1904.

CHICAGO HOMEOPATHIC MEDICAL COLLEGE.—This was organized in 1876, and has a faculty of 19 professors and 44 adjuncts, lecturers, etc., a total of 63. The Chicago Homeopathic and Cook County hospitals, together with a college dispensary, furnish clinical material. Applicants for admission must show by certificate from high school, or its equivalent, a sufficient knowledge of English, arithmetic, algebra, physics, United States history, geography, botany and Latin, equivalent to a year's study. The course covers four years of seven and one-half months each. Total fees are about $110 for each year. The Dean is Dr. W. M. Stearns, 87 Wabash Ave. Total registration, 1902-3, was 130; graduates, 37. The next session opens September, 1903, and ends April, 1904.

HERING MEDICAL COLLEGE.—Homeopathic. This school was organized in 1892. Dunham Medical College, organized in 1895, was consolidated with this school in August, 1902. The faculty comprises 28 professors and 16 associates, lecturers, etc., in all 44. Hering College Hospital, Baptist and Cook County hospitals supply clinical facilities. The course covers four years of seven months each. The total fees for a full course are $300 if paid in advance, or $100 per year. The Dean is Dr. J. T. Kent, 92 State St. Total registration for 1902-3 was 90; graduates, 22. The twelfth session begins Sept. 8, 1903, and ends April 11, 1904.

JENNER MEDICAL COLLEGE.—This is a day and evening school, organized in 1892. The faculty consists of 46 professors and 7 assistants, 53 in all. Cook County Hospital and college dispensary supply clinical material. The course covers four years of 40 weeks each and embraces laboratory, didactic and clinical instruction. The total fees each year are $100, with a $5 matriculation fee, paid but once. The Registrar is Dr. C. Shorman, 163 Randolph St. Total enrolment for 1902-3 was 107; graduates, 13. The next session begins September, 1903, and will end June, 1904.

HARVEY MEDICAL COLLEGE.—This is a night school, organized in 1891. The lecture and laboratory work is all in the evening between the hours of 7 and 10, six days of the week and forty weeks of the year. The clinical work, hospital, dispensary, in practice and out-practice, are between the hours of 10 a. m. and 10 p. m. Attendance on 100 clinical hours yearly before 7 in the evening is obligatory beside attendance by the seniors on night obstetric cases and Saturday evening clinic at Cook County Hospital. The faculty is composed of 42 professors, 21 instructors and assistants, total, 63. The course covers four years of ten months each. The total fees are, each year, $200. The Dean is Dr. Frances Dickinson. Total registration for 1902-3 was 330;

graduates, 20. The thirteenth session begins September, 1903, and ends June, 1904.

ILLINOIS MEDICAL COLLEGE.—This school, organized in 1894, has a faculty of 26 professors and 19 assistants, a total of 45. A college dispensary and Cook County Hospital are available for clinical study. The requirements of admission include a high school diploma or its equivalent. The college is a member of the Association of American Medical Colleges. Attendance for seven months during each of four years is necessary for graduation. Total fees are about $75 for each year. The Dean is Dr. B. B. Eads, 103 State St. Total registration for 1902-3 was 265; graduates, 47. The next fall term begins Oct. 1, 1903.

AMERICAN MEDICAL MISSIONARY COLLEGE.—This school was organized in 1895 and has the primal object of educating men and women as missionary physicians. The faculty numbers 25. The didactics and laboratory work, covering the first two years, are carried on at Battle Creek, Mich., and the clinical studies in Chicago. A hospital with 20 beds, in connection with the college, together with a free college dispensary, with an obstetric department, supply material for practical work. The college is a member of the Association of American Medical Colleges. The course covers four years of nine months each. Total fees are $125 for each of the four years. The Secretary is Dr. E. L. Eggleston, Battle Creek, Mich. Total registration for 1902-3 was 88; graduates, 22. The ninth session opens Sept. 23, 1903, and closes June 22, 1904.

COLLEGE OF MEDICINE AND SURGERY.—Physio-Medical. This school was organized in 1896 and has a faculty of 44 teachers. A college dispensary supplies material for clinical work. The course covers four years of seven months each. Fees for the first year, $100; for the second and third, $95 each, and $110 for the fourth. The Secretary is Dr. Florence Dressler, 245 Ashland Boul. Total registration for 1902-3 was 76; graduates, 12. The next session begins September, 1903, and ends April, 1904.

NATIONAL MEDICAL UNIVERSITY.—This was organized in 1891, and its courses include instruction in the methods of all the so-called schools of practice, including osteopathy. The faculty numbers 76. The requirements for entrance are in accordance with the requirements of the Illinois State Board of Health. Each year is divided into four quarters of thirteen weeks each. The fees are $100 per year. The Registrar is Dr. L. D. Rogers, 533 Wells St. Total matriculants for 1902-3 were 173; graduates, 17. The autumn quarter will begin Sept. 30, 1903.

AMERICAN COLLEGE OF MEDICINE AND SURGERY.—Eclectic. This school was founded in 1901 and has a faculty of 65. The requirements for entrance are in accord with the rules of the State Board of Health. The course is four years of eight months each. American and Cook County hospitals supply clinical material. The Secretary is Dr. J. D. Robertson, 103 State St. The annual fee is $100; matriculation fee is $5; a total fee for one year, with board, room, light and heat, is $208. The enrolment, 1902-3, was 126; graduates, 10. The next session begins Sept. 29, 1903, and closes May 14, 1904.

INDIANA.

Indiana, population 2,516,462, has five medical colleges. Four are situated in Indianapolis, a city of 169,164 people: The Central College of Physicians and Surgeons, Medical College of Indiana, the Eclectic Medical College and the Physio-Medical College of Indiana. The clinical facilities of Indianapolis are good, and board and lodging can be obtained from $3 a week and upward. The Fort Wayne College of Medicine is situated in Fort Wayne, a railroad and manufacturing town of 45,115 inhabitants. Board and room can be obtained there at an average of $3 a week.

Indianapolis.

CENTRAL COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1879 and reorganized in 1901. The faculty numbers 23 professors and 45 lecturers and demonstrators, total 68. A new college building has been erected on the most up-to-date plans. Its floor space comprises 25,000 square feet, more than half of which is devoted to laboratory teaching. The school gives instruction largely by laboratory and clinical methods. Clinical facilities are furnished by a dispensary maintained by the college, by the City Dispensary, City Hospital, St. Vincent's Infirmary and the Central Hospital for the Insane. Bedside clinics are given to sections of senior class daily at City Hospital. This college was a charter member of the Association of American Medical Colleges. The course is four years of 7 months each. The Secretary is Dr. John F. Barnhill. The fees are $75 for each year. Total registration, 1902-3, was 115; graduates, 22. The session for 1903-4 will open Sept. 22, 1903.

MEDICAL COLLEGE OF INDIANA.—This is the Medical Department of the University of Indianapolis and was organized in 1869. The faculty embraces 26 professors, 42 adjuncts, lecturers, etc., a total of 68. The City Hospital, containing 200 beds; Indianapolis Dispensary; Central Hospital for the Insane, with a capacity for 1800 patients; St. Vincent's and the Maternity hospitals, and a college dispensary provide clinical facilities; the wards in the charity hospitals are open to students of this college for bedside instruction. The laboratory and lecture-room space is ample. This college is a member of the Association of American Medical Colleges. The course extends over four years of seven months each. Fees: First and second years, $80 each; third, $75, and $100 for the fourth year, which includes graduation fee. The Dean is Dr. Henry Jameson, Newton-Claypool Bldg. Total enrolment for 1902-3 was 332; graduates, 76. The thirty-fourth session opens September, 1903, and closes April, 1904.

ECLECTIC MEDICAL COLLEGE OF INDIANA.—This school was organized in 1900 and has a teaching force of 31. The course is four years of six months each. Fees: For each year, $75, or for all four, $225; $25 for graduation. Total registration, 1902-3, 28; graduates, 5. The Dean is Dr. R. T. Laycock, 909 Bates St. The next session begins Sept. 22, 1903, and ends April 10, 1904.

PHYSIO-MEDICAL COLLEGE OF INDIANA.—This school was organized in 1873, and has a faculty of 30. The course is four years of 26 weeks each. Total fees for each year are $70. The Secretary is Dr. C. T. Bedford. Total enrolment, 1902-3, was 29; graduates, 9. The next session begins Oct. 7, 1903, and closes May, 1904.

Fort Wayne.

FORT WAYNE COLLEGE OF MEDICINE.—This school was organized in 1879, has a faculty of 25 professors and 9 lecturers and assistants, a total of 34. St. Joseph's Hospital, with a capacity of 250 patients; Hope Hospital, with 200 beds; St. Roche's Hospital, having accommodation for 35 patients; Indiana School for Feeble-Minded Youth and Allen County Orphan Asylum, capable of holding 150 children, supply the clinical facilities. This school is a member of the Association of American Medical Colleges. The curriculum covers four years of seven months each. The course is practical, supplemented by lectures and laboratory work. The total fees for each year are $75, with an additional $5 matriculation fee, payable once. The Dean is Dr. C. B. Stemen, 715 Broadway. Total registration, 1902-3, was 46; graduates, 5. The next session opens Sept. 8, 1903, and closes April 22, 1904.

IOWA.

Iowa, population 2,231,853, contains five medical colleges. The College of Medicine of the State University of Iowa and the College of Homeopathic Medicine of the State University of Iowa are located in Iowa City (population 7,987). In Des Moines (population 62,139) is the Iowa College of Physicians and Surgeons. In Sioux City (population 33,111) is the Sioux City College of Medicine. In Keokuk (population 15,641) is Keokuk Medical College, College of Physicians and Surgeons. Board and lodging may be had in Des Moines for $15 a month and upward and in the other cities named for from $2.50 to $5 per week.

Iowa City.

COLLEGE OF MEDICINE OF THE STATE UNIVERSITY OF IOWA.—This department was organized in 1870. The faculty is made up of 13 professors, 26 lecturers, demonstrators and assistants, a total of 39. The University Hospital, built in 1897 at a cost of $50,000, supplies the clinical material. The school is a member of the Association of American Medical Colleges. The course of study covers four years of thirty-six weeks each, embracing graded laboratory, didactic and clinical work. Combined courses leading to more than one degree are offered. Total fees for each year are $65. The Dean is Dr. James R. Guthrie, Dubuque. Total number of students registered for 1902-3 was 251; graduates, 35. The thirty-fourth session opens Sept. 24, 1903, and ends June 15, 1904.

COLLEGE OF HOMEOPATHIC MEDICINE OF THE STATE UNIVERSITY OF IOWA.—This was organized in 1877. The faculty is composed of 10 professors and 10 lecturers and assistants, a total of 20, but some of these are of the faculty of the College of Medicine. The requirements for admission, and the work, with the exception of that pertaining to homeopathy, are the same as those for the other department. The fees are also the same. The Dean is Dr. George Royal, Des Moines. Total registration for 1902-3 was 35; graduates, 11. The twenty-seventh session begins in September, 1903, and will end in June, 1904.

Des Moines.

THE IOWA COLLEGE OF PHYSICIANS AND SURGEONS.—This, the Medical Department of Drake University, was organized in 1882. The faculty contains 16 professors and 16 assistants, a total of 32. Mercy and Methodist hospitals furnish clinical material and attendance on clinics is required the same as on lectures. The requirements for admission are those determined by the Association of American Medical Colleges, of which association this college is a member, and by the Iowa State Board of Medical Examiners. Instruction is given by means of lectures, recitations, demonstrations, laboratory work and hospital clinics. The work covers a graded course of four years of nine months each. The total fees for the first two years are $80 each, and for the last two years, $75 each. The Dean is Dr. D. S. Fairchild. The total registration for 1902-3 was 66; graduates, 11. The twenty-second session begins Sept. 14, 1903, and ends June 16, 1904.

Sioux City.

SIOUX CITY COLLEGE OF MEDICINE.—This school was organized in 1891. The faculty numbers 15. Clinical material is supplied by St. Joseph's, Mercy and Samaritan Hospitals and a college dispensary. This college is a member of the Association of American Medical Colleges. The system of study embraces a four-year graded course, eight months being a school year. Final examinations are held at the close of each course of instruction. Matriculation fee, paid but once, $5; tuition, each year, $48; hospital fee, $5, and graduating fee, $20. The Secretary is Dr. J. N. Warren. Total number of students registered, 1902-3, was 72; graduates, 13. The fourteenth session opens Sept. 8, 1903, and will close May 4, 1904.

Keokuk.

KEOKUK MEDICAL COLLEGE, COLLEGE OF PHYSICIANS AND SURGEONS.—In 1849 the College of Physicians and Surgeons, Keokuk, was organized and four years later it became the Medical Department of the University of Iowa, continuing as such until 1870, when the original name was resumed. By the union, in 1899, of this college with the Keokuk Medical College, organized in 1890, the present school under the above name was founded. The clinical material is good. St. Joseph's Hospital is open to the student for study and the clinics held there are large and varied. The faculty is composed of 17 professors and 5 assistants and demonstrators, 22 in all. This college is a member of the Association of American Medical Colleges. The studies embrace a graded course of four years of seven months each. The total fees for the first year are $63; for the second and third, $58 each, and $53 for the last year. The Secretary is Dr. C. E. Ruth. Total registration for 1902-3 was 243; graduates, 56. The next session begins Sept. 15, 1903, and ends April 19, 1904.

KANSAS.

Kansas, population 1,470,495, has three medical colleges: Kansas Medical College is in Topeka (population 33,608), and the College of Physicians and Surgeons in Kansas City (population 55,000). In addition, there is a school which does not grant degrees, but prepares students in the first two years. This is the Medical School of the University of Kansas, at Lawrence, a town of 10,862 people. Board and lodging in all these places may be had for $3 to $5 per week.

Lawrence.

SCHOOL OF MEDICINE OF THE UNIVERSITY OF KANSAS.—This school does not confer the degree of Doctor of Medicine. It was organized in 1880. The faculty numbers 18. This school is a member of the Association of American Medical Colleges. Only the purely scientific subjects are taught, but the work in these is thorough, seventy-two weeks being devoted to the two-year course. The greater part of the work is in the laboratory, with recitations and assigned readings, the lectures being supplementary only. For this reason the equipment and arrangement of the laboratories have been given special attention. A combined course of four years is offered, conferring "the degree of bachelor of arts in medicine." The total fees to residents of the state are: First year, $35; second, $30; to non-residents of the state, $60 and $50. The Acting Dean is Dr. C. E. McClung. The number of students registered for 1902-3 was 31. The next session begins September, 1903, and will end June, 1904.

Topeka.

KANSAS MEDICAL COLLEGE.—This college, organized in 1890, has a faculty of 25 professors and 8 lecturers and assistants, 33 in all. Good material for both medical and surgical clinics is found in Christ's Hospital, with 100 beds, and Topeka State Hospital; the dispensary in the college building also supplies material for class demonstration. The college is a member of the Association of American Medical Colleges. The college building affords ample laboratory and lecture-room space. The course of study is a graded one covering four years of 30 weeks each. Individual instruction is especially aimed at. The total fees for the first three years are $70 each, and $30 for the last year. The Dean is Dr. John E. Minney. The total registration for 1902-3 was 101; graduates, 12. The fourteenth session begins Sept. 16, 1903, and will close April 14, 1904.

Kansas City (Kansas).

COLLEGE OF PHYSICIANS AND SURGEONS.—This was organized in 1894 as the Medical Department of Kansas City University. The faculty is made up of 29 professors, 13 lecturers and assistants, a total of 42. Bethany Hospital, with 60 beds; St. Margaret's Hospital, a college dispensary and an outside obstetric department supply clinical material. Practical demonstration and bedside teaching is emphasized in the work. The requirements for admission are in accordance with the rules of the Association of American Medical Colleges. The course of study is a graded one of four years, seven months each. A scholarship is offered for $175, but taken separately the total fees for the first three years are $60 each, and for the fourth year, $50; matriculation fee, $5, payable once. The Dean is Dr. J. W. May. The total registration of students for 1902-3 was 52; graduates, 10. The tenth session opens September, 1903, and will close March, 1904.

KENTUCKY.

Kentucky, population 2,147,174, has seven medical colleges. They are all situated in Louisville, a city of about 225,000 inhabitants, and are as follows: University of Louisville Medical Department, Kentucky School of Medicine, Louisville Medical College, Hospital College of Medicine, Southwestern Homeopathic Medical College, Kentucky University Medical Department, and Louisville National Medical College. Board and lodging in Louisville cost from $3 to $4 per week.

Louisville.

UNIVERSITY OF LOUISVILLE MEDICAL DEPARTMENT.—This school was organized in 1837, under the name, Louisville Medical Institute, and in 1846 assumed its present title. It has a faculty of 11 professors, 26 lecturers, demonstrators, etc., a total of 37. The University Hospital, City Hospital, Sts. Mary and Elizabeth Hospital, together with the college dispensary, furnish good clinical material. This school is a member of the Association of American Medical Colleges. The course covers graded work for four years of six months each. There are two six months' courses in the year; one course runs from Sept. 21, 1903, to April 1, 1904; the other runs from Jan. 1, 1904, to July 1, 1904. Total fees: First year, $107; second, $122; third, $100, and fourth, $112. The Dean is Dr. J. M. Bodine. Total registration for 1902-3 was 227; graduates, 34. The sixty-seventh session begins Sept. 21, 1903.

KENTUCKY SCHOOL OF MEDICINE.—This school was organized in 1850, and has a faculty composed of 20 professors, 19 lecturers, instructors and assistants, a total of 39. The College Hospital, City Hospital and the college dispensary furnish the facilities for clinical study. The student is brought directly into contact with the patient through dispensary and bedside work by dividing the classes into sections. This college is a member of the Association of American Medical Colleges. The laboratories and their equipment are good. The curriculum embraces a four years' course of 28 weeks each. The fees for the first two years are $120 each; for the third year, $100, and $90 for the fourth year. The Dean is Dr. W. H. Wathen, 628½ Fourth Ave. Total number of students registered for 1902-3 was 290; graduates, 56. The next session begins Jan. 1, 1904, and will end July 15, 1904.

LOUISVILLE MEDICAL COLLEGE.—This school was organized in 1869 and has a faculty of 11 professors and 11 instructors and assistants, 22 in all. The City Hospital, College Infirmary and a dispensary offer good clinical facilities. Applicants for admission must show by diploma, certificate or examination that they are sufficiently proficient in English, arithmetic, algebra, physics and such Latin as would be acquired in one year's study. The laboratories and lecture rooms are ample. The course of study covers four years of six months each. The fees for the first three years are $100 each; for the fourth, $90. The Secretary is Dr. Irvin Abell. Total registration for 1902-3 was 257; graduates, 53. The next session opens Sept. 21, 1903, and closes March 31, 1904.

HOSPITAL COLLEGE OF MEDICINE.—This school is the medical department of Central University of Kentucky and was organized in 1873. The faculty is composed of 9 professors and 35 assistants, lecturers, etc., a total of 44. The Gray Street Infirmary, City Hospital and a well-equipped college dispensary present good facilities for clinical study. This college is a member of the Association of American Medical Colleges. Laboratory work, which is a prominent feature of the course, is thorough and practical. The laboratories and amphitheaters are ample in equipment and capacity, and the hospital advantages give opportunity for personal bedside instruction. The course covers four years of six months each. Total fees for each of first two years, $120; for the third year, $85, and $125 for the fourth year. The Dean is Dr. P. Richard Taylor. Total enrolment for 1902-3 was 421; graduates, 69. The thirtieth session opens Jan. 1, 1904, and closes July 1, 1904.

KENTUCKY UNIVERSITY MEDICAL DEPARTMENT.—This school was organized in 1898. The faculty is composed of 14 professors, 19 lecturers, demonstrators, etc., 33 in all. Broadway Infirmary, the City Hospital and a college dispensary furnish clinical material. The school is a member of the Association of American Medical Colleges. The buildings provide ample facilities for clinical, laboratory and didactic instruction. The course of study embraces graded work for four years of at least twenty-six weeks each. The calendar year is divided into four quarters of thirteen weeks each. Two quarters constitute a college year. Fees are $25 per quarter. The Dean is Dr. Thomas C. Evans, 419 W. Chestnut St. Total number of students registered in 1902-3 was 330; graduates, 57. The next session opens Oct. 1, 1903.

SOUTHWESTERN HOMEOPATHIC MEDICAL COLLEGE.—This college was organized in 1892 and has a faculty of 18 professors and 12 lecturers and assistants, 30 in all. A college dispensary supplies clinical material. The curriculum covers four years of seven months each. Total fees: First and second years, $80; third, $70, and $65 for the fourth. The Dean is Dr. A. L. Monroe. Total number of students for 1902-3 was 22; graduates, 5. Next session opens Sept. 29, 1903, and closes April 26, 1904.

LOUISVILLE NATIONAL MEDICAL COLLEGE.—Colored. This was chartered in 1888 and shows a teaching force of 19. There is a four-year course, seven months to the year; the fees are $58, $58, $55 and $50 for the four years respectively. The Dean is Dr. W. A. Burney. The attendance, 1902-3, was 26; graduates, 4. The next session opens Oct. 6, 1903, and ends about May 10, 1904.

LOUISIANA.

Louisiana, having a population of 1,381,625, contains two medical colleges: Medical Department of the Tulane University of Louisiana and New Orleans University. They are both situated in New Orleans, a city of 287,104 people. The cost of room and board is from $16 to $22 a month.

New Orleans.

MEDICAL DEPARTMENT OF THE TULANE UNIVERSITY OF LOUISIANA.—This school was organized in 1834 as the Medical College of Louisiana, and became, by law, in 1847, the Medical Department of the University of Louisiana, and in 1884 the Medical Department of the Tulane University of Louisiana. The faculty and all other instructors number 41. By acts of legislature the Charity Hospital, with its 900 beds, has been opened to the students of this school for clinical study, not only in medicine and surgery, but also in obstetrics and gynecology. In the year 1902 there were 8,793 cases treated in the wards of this hospital; these were indoor patients, and, in addition, 21,129 outdoor patients were treated in the free dispensary department. The Milliken Memorial Hospital, with a capacity for 200 children, is also available for study of clinical cases. Bedside instruction is given by the attending physicians to these hospitals, and postmortem examinations are held before the students. This college is a member of the Southern Medical College Association. The laboratories are large and well equipped, and the lecture rooms and recitation rooms are ample. The course of study covers four years of twenty-eight weeks each. Total fees for the first two years are $135 each, and for the third and fourth, $145 and $165 respectively. The Dean is Dr. Stanford E. Chaille, New Orleans. The total number of medical students registered for 1902-3 was 405; graduates, 82. The seventieth session begins Oct. 22, 1903, and will close May 4, 1904.

FLINT MEDICAL COLLEGE OF NEW ORLEANS UNIVERSITY.—Colored. This school was organized in 1889. The faculty is made up of 9 professors, 4 lecturers and instructors, 13 in all. Clinical material is supplied by the Sarah Goodridge Hospital and by an outdoor clinic. This college is a member of the Association of American Medical Colleges. The curriculum covers a graded course of four years, thirty weeks each. The laboratories and lecture rooms are ample. Examinations are held monthly. Total fees for the first, second and third year are $40 each, and $50 for the last year. The Dean is Dr. H. J. Clements, New Orleans. Total enrolment for 1902-3 was 42; graduates, 5. The fifteenth college year begins Sept. 1, 1903, and will end March 18, 1904.

MAINE.

Maine, population 694,466, has one medical college, located in Portland, population 50,000. Board and lodging cost from $3 to $5 a week.

Portland.

MEDICAL SCHOOL OF MAINE.—This, the Medical Department of Bowdoin College, was organized in 1820. It has 13 professors and 5 instructors, total 18. Students of the first and second years are instructed in Brunswick, a town with 6,800 inhabitants. The third

and fourth year classes are taught in Portland, where are situated the Maine General Hospital and other clinical advantages. Applicants for admission, unless they possess a diploma, are examined in English, arithmetic, algebra, geometry, United States history, physics, chemistry and Latin. The course covers four years of twenty-six weeks each. The total fees are $120 for the first year; for the second and third, $110, and $110 for the fourth year. The Dean is Dr. Alfred Mitchell, Brunswick. Total number of students in 1903, 100; graduates, 20. The next session opens Dec. 23, 1903, and closes June 23, 1904.

MARYLAND.

Maryland, with a population of 1,188,044, contains eight medical colleges, all located in Baltimore, a city with 508,957 inhabitants. They are as follows: School of Medicine of the University of Maryland, College of Physicians and Surgeons, Baltimore University School of Medicine, Baltimore Medical College, Woman's Medical College, Southern Homeopathic Medical College, Johns Hopkins Medical School and Maryland Medical College. The Bay View Hospital, having a capacity for 2,000 patients, is open to students for clinical instruction, and furnishes good opportunities for practical demonstrations. Board and lodging can be obtained for from $3 to $5 per week.

Baltimore.

SCHOOL OF MEDICINE OF THE UNIVERSITY OF MARYLAND.—This institution was organized in 1807 as the College of Medicine of Maryland, and in 1812, other faculties having been added, the whole was chartered under the name of the University of Maryland. The faculty is composed of 11 professors, 44 associates and lecturers, etc., a total of 55. The University Hospital, a part of which is used for a hospital for foreign seamen and another portion for a free city hospital, offers excellent clinical facilities. Besides this, the Presbyterian Eye, Ear and Throat Charity Hospital, in which 10,820 patients were treated in 1901; the Hospital for the Relief of Crippled and Deformed Children, containing 40 beds; the Maternity Hospital, and a college dispensary furnish material for clinical study. This school is a member of the Association of American Medical Colleges. The laboratories and lecture-rooms are ample and well equipped. The fourth-year class, divided into sections, receives special training in practical laboratory work in a well-appointed clinical laboratory. Didactic, laboratory and clinical instruction, special attention being paid to bedside work, make up the system of teaching. The course covers four years of seven and a half months each, and is graded. The total fees for the first two years are $120 each; for the third year, $110, and $140 for the final year. The Dean is Dr. R. Dorsey Coale, Baltimore. The total number of students registered in 1902-3 was 392; graduates, 96. The ninety-seventh session begins Oct. 1, 1903, and will terminate May 15, 1904.

COLLEGE OF PHYSICIANS AND SURGEONS, BALTIMORE.—This school was organized in 1872, and in 1878 Washington University School of Medicine, established in 1827, was consolidated with it. The faculty numbers 49. The clinical facilities, besides those afforded in common with other schools, are supplied by the Baltimore City Hospital; the Hospital for the Colored Race, containing 100 beds; the Nursery and Child's Hospital, with 150 beds; the Maryland Lying-in Asylum, and a college dispensary. This school is a member of the Association of American Medical Colleges. The work covers a graded course of four years, seven months constituting a year. Total fees are $115, $110, $110 and $130 for the respective years. The Dean is Dr. Thomas Opie. The total number of students registered in 1902-3 was 315; graduates, 76. The next session opens Oct. 1, 1903, and closes May 1, 1904.

BALTIMORE MEDICAL COLLEGE.—This college was organized in 1881, and has a faculty of 51. The clinical material is furnished by the Maryland General Hospital, having a capacity of 200 beds; the Maryland Lying-in Hospital, the Mount Hope Retreat, which presents good opportunity for the study of nervous and mental diseases, and a college dispensary, which, besides the great number of ambulatory patients treated, has an outdoor department that permits of the advanced student taking care of charity cases and carrying out his own treatment. This college belongs to the Association of American Medical Colleges. The college buildings afford ample laboratory, clinical and lecture-room space. Bedside teaching in the hospital wards is carried on in sections and every member of the senior class is required to attend throughout the session. The course of study is graded and covers four years of seven months each. The Dean is Dr. David Streett. The total number of students registered in 1902-3 was 410; graduates, 93. The twenty-third session opens September, 1903, and closes April, 1904.

WOMAN'S MEDICAL COLLEGE.—This school was organized in 1882 and has a faculty of 18 professors, 9 associates, assistants and lecturers, a total of 27. The Hospital of the Woman's Medical College and a college dispensary furnish general clinical material, while abundant special material is furnished by the Presbyterian, Eye and Ear and the Sheppard and Enoch Pratt Hospital (for mental cases). The college is a member of the Association of American Medical Colleges. The laboratories and lecture rooms are equipped with all necessary apparatus; the practical work is emphasized. Eight months constitute a school year, and the course covers graded work for four years. The total fees for the first three years are $106 each, and $81 for the last year, with $30 graduation fee. The Dean is Dr. R. H. Thomas, 1718 John St. Total number registered for 1902-3 was 16; graduates, 2. The twenty-second session opens Oct. 1, 1903, and closes May 27, 1904.

BALTIMORE UNIVERSITY SCHOOL OF MEDICINE.—This school, organized in 1884, has a faculty of 10 professors and 25 lecturers, demonstrators, etc., in all 35. The Baltimore University Hospital, Lying-in Hospital and the clinical material used in common with the other schools, supply the facilities for practical work. This college is a member of the Association of American Medical Colleges. The course is four years of six months each. The fees are about $100 each year. The Dean is Dr. Hampson H. Biedler, 119 W. Saratoga St. Total registration for year 1902-3 was 58; graduates, 26. The twentieth session opens October, 1903, and closes April, 1904.

JOHNS HOPKINS MEDICAL SCHOOL.—This is the Medical Department of Johns Hopkins University and was organized in 1893. The faculty comprises 29 professors, 45 lecturers and assistants, a total of 74. The Johns Hopkins Hospital and Dispensary furnishes abundant and varied clinical material; the lying-in department of the hospital, opened in 1896, is in successful operation. The requirements for admission demand that the applicant either has, (*a*) completed the chemical-biologic course which leads to the A.B. degree in the university; (*b*) graduated at an approved college or scientific school, and can furnish evidence of an acquaintance with Latin and a fair reading knowledge of French and German, and such knowledge of physics, chemistry and biology as above indicated. If the candidate is unable to show this, he must pass a satisfactory examination covering the ground. The school is a member of the Association of American Medical Colleges. The laboratories are large, well lighted and well equipped. The buildings are ample and built expressly for the purpose for which they are used. In the method of instruction special emphasis is laid on practical work in the laboratories, dispensary and in the wards of the hospital. The first two years are devoted to practical work in the laboratories, combined with demonstrations, recitations and lectures, and during the remainder of the course opportunity for the personal study of cases is given. The work covers a graded course of four years, eight and a half months to the year. Final examinations, partly written and partly oral, include practical tests in laboratory and clinical work; the general character of the student's work is closely watched. The charge for tuition is $200 per annum, with no fees unless a microscope is rented; that fee is $5 a year. The Dean is Dr. William H. Howell, 232 W. Lanvale St. Total registration in 1902-3 was 257; graduates, 49. The eleventh session begins Oct. 6, 1903, and ends June 15, 1904.

MARYLAND MEDICAL COLLEGE.—This school was organized in 1898, and has a faculty of 14 professors, 19 associates, lecturers, etc., 33 in all. The Franklin Square Hospital and a college dispensary furnish clinical material. The course of study covers four years of eight months each. A matriculation fee of $5 and total laboratory fees for the three years of $50 are charged; tuition is $75 each year. The Dean is Dr. J. Wm. Funck, 1631 Eutaw Pl. Total registration for 1902-3 was 204; graduates, 59. The sixth session begins Sept. 15, 1903, and closes in May, 1904.

SOUTHERN HOMEOPATHIC MEDICAL COLLEGE.—This school was organized in 1890, and has a faculty of 11 professors, 21 associates and lecturers, a total of 32. The clinical facilities are those offered by the Maryland Homeopathic Hospital, which has 55 beds, and the dispensary; the obstetric department also furnishes clinical material. Applicants for matriculation must pass a satisfactory examination in English, arithmetic, geography, history, and Latin, unless they possess satisfactory evidence that they have done a corresponding amount of work. The course covers graded work for four years, seven months to the year. The fees are $105 for the first year, $100 each for the second and third, and $130 for the last year; $350 in advance for the full four years' course. The Dean is Dr. George T. Shower, 421 Roland Ave. Total registration for 1902-3 was 26; graduates, 3. The thirtieth session begins Oct. 5, 1903, and ends May 4, 1904.

MASSACHUSETTS.

Massachusetts, population 2,805,346, has four medical colleges: Medical School of Harvard University, Boston University School of Medicine, College of Physicians and Surgeons, and Tuft's College Medical School. They are all situated in Boston, a city of 603,163 inhabitants. Board and lodging can be obtained for from $5 to $7 per week.

Boston.

MEDICAL SCHOOL OF HARVARD UNIVERSITY.—This was organized in 1782, and has a faculty of 26 professors, 112 associates and assistants, etc., a total of 138. Beside the clinical advantages mentioned, the Boston Lying-in Hospital, the Boston Dispensary, where 43,918 patients were treated last year; the Infants' Hospital, the Children's Hospital, Long Island Hospital, containing 250 beds, and the Marine Hospital, all furnish excellent opportunity to the student for clinical study. Students are also permitted to visit the Free Hospital for Women and Carney Hospital on application to the physicians on duty. Candidates for admission "must present a degree in arts, literature, philosophy or science from a recognized college or scientific school, with the exception of such persons, of suitable age and attainments, as may be admitted by special vote of the faculty in each case." Each candidate is required to hand in the original note-book in which he recorded the work performed by him in qualitative analysis, and also to pass a written examination in theoretical and descriptive chemistry. If conditioned in chemistry one year is allowed in which to remove the condition. The laboratories and lecture rooms offer ample facilities and the equipment is good; special facilities are open to those desiring to pursue advanced or original work. The course of study covers four years of nine months each; the course is graded, and each correlated group as taken up presents sufficient variety to avoid monotony. A series of written, oral and practical examinations are distributed throughout the course of study. Fees: Matriculation, $5; $200 each year. The Dean is Dr. William L. Richardson, 688 Boylston St. The total registration for 1902-3 was 432; graduates, 114. The 122d session begins Oct. 1, 1903, and ends June 24, 1904.

COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1880, and has a faculty of 24 professors, and 15 lecturers and assistants, a total of 39. Clinical facilities are furnished by the North End Hospital and Dispensary, Union General Hospital, and the city and state institutions. This school is a member of the Association of American Medical Colleges. The course of study covers graded work for four years of eight months each. The total fees for the first year are $100, and for each of the other years about $110, with a graduation fee of $30. The Registrar is Dr. John H. Jackson, 155 Franklin St., Fall River. Total students registered 1902-3, 117; graduates, 19. The twenty-fourth session begins Sept. 25, 1903, and ends June, 1904.

TUFTS COLLEGE MEDICAL SCHOOL.—This school was organized in 1893 as the Medical Department of Tufts College. It has a faculty of 28 professors, 46 assistants and lecturers, etc., a total of 74. Clinical material is furnished by the Boston City Hospital, Massachusetts Charitable Eye and Ear Infirmary, Free Home for Consumptives, Free Hospital for Women, Boston Dispensary, Cambridge Hospital, St. Elizabeth's Hospital, Carney Hospital and the college dispensary; the student has also the advantages derived from an out-department in connection with the Boston Dispensary. "Graduates of a high school, college or university, and students having certificates of entrance to a college or university, or holding the State of New York Regents' certificate," also certain approved preparatory school graduates, are admitted without examination; all others must pass an examination in English, Latin, physics and mathematics, including arithmetic, elementary algebra and plane geometry. The laboratories and lecture rooms are ample in their equipment and capacity. Teaching is carried on by means of lectures, recitations and practical work in the laboratories and clinics; frequent examinations are held during a course and a final examination on completing the subject. Graded instruction covering four years of eight months each makes up the full course. The total fees are $125 each year; dissecting material is furnished at cost. The Dean is Dr. Harold Williams, 528 Beacon St. Total number of students for 1902-3 was 349; graduates, 35. The eleventh session begins October, 1903, and ends June 1904.

BOSTON UNIVERSITY SCHOOL OF MEDICINE.—Homeopathic. This school was organized in 1873; in 1874 the New England Female Medical College, founded in 1848, was merged into it. The faculty includes 23 professors, 35 associates and assistants, etc., a total of 58. Clinical material is furnished by the Massachusetts Homeopathic Hospital, containing 225 beds, a dispensary, a maternity hospital, and the Westborough Insane Hospital; 800 patients. Candidates who have taken their degree in arts, philosophy or science are not examined; all others are examined in English, Latin, French or German or history, mathematics, physics and chemistry. The instruction is graded and covers a period of four years, eight months each. Total fees for the first year are $105; for the second and third, $125 each, and for the last year, $155. The Dean is Dr. John P. Sutherland, 295 Commonwealth Ave. Total registration for 1902-3 was 127; graduates, 36. The thirty-first session opens Oct. 8, 1903, and closes June 1, 1904.

MICHIGAN.

Michigan, population 2,420,982, has six medical colleges. Two of these, University of Michigan Department of Medicine and Surgery and the Homeopathic College of the University of Michigan, are located at Ann Arbor, a city of 14,509 people. Board and lodging cost from $2.50 to $5 a week. Detroit, a city of 300,000 inhabitants, contains three medical colleges, as follows: Detroit College of Medicine, Detroit Homeopathic College and the Michigan College of Medicine and Surgery. Board and room can be obtained for $3 a week and upward. Grand Rapids Medical College is located in Grand Rapids, population 87,565. Room and board cost from $3 to $3.50 a week.

Ann Arbor.

UNIVERSITY OF MICHIGAN, DEPARTMENT OF MEDICINE AND SURGERY.—This was organized in 1850, and has a faculty composed of 17 professors, 50 associates, instructors, etc., a total of 67. The University Hospital, with nearly 200 beds, furnishes the clinical facilities. The requirements for admission provide that the applicant, either by certificate or examination, show a sufficient knowledge of the following: English grammar, rhetoric and composition; United States and general history; algebra, through quadratics, plane and solid geometry and plane trigonometry; physics, biology and chemistry, these subjects to be accompanied by laboratory work; German or French and Latin. The laboratories and their equipment are good, and the training in them and in didactic work is thorough. The new medical building accommodating the laboratories of hygiene, bacteriology, physiologic chemistry, pathology, histology, embryology and anatomy is now completed and occupied. This school is a member of the Association of American Medical Colleges. The curriculum embraces four years of nine months each. A combined course leading to degrees in both arts and medicine in six years is offered. The total fees for Michigan students for the entire course of four years is about $300, and for others $350. The Dean is Dr. Victor C. Vaughan. Total registration for 1902-3 was 455; graduates, 92. Next session begins Sept. 29, 1903, and will end June 23, 1904.

HOMEOPATHIC COLLEGE, UNIVERSITY OF MICHIGAN.—This department of the University was organized in 1875 and has a faculty of 18 professors and 12 assistants, total 20; a part of the teaching force is from the other departments of the University. The Homeopathic Hospital, containing 140 beds, furnishes material for clinical teaching. The course covers four years of nine months each. The total fees for Michigan students are about $240 for the four years, and for other students about $295. The Dean is Dr. W. B. Hinsdale. Total enrolment for 1902-3 was 76; graduates, 13.

Detroit.

DETROIT COLLEGE OF MEDICINE.—This school was formed in 1885 by the union of Detroit Medical College, organized in 1868, and the Michigan College of Medicine, established 1880. The faculty embraces 21 professors, 50 lecturers, instructors, etc., a total of 71. Clinical facilities are offered by the following hospitals: St. Mary's and Harper, each of which contain a free disepnsary; Woman's, St. Luke's, the Children's Free Hospital and the House of Providence. This school is a member of the Association of American Medical Colleges. The course covers four years of seven months each. The work includes laboratory, didactic and clinical study. Fees: Matriculation, paid once, $5; tuition, each term, $65; hospital and laboratory tickets, each $10, and diploma fee $30. The Secretary is Dr. H. O. Walker. Total enrolment for 1902-3 was 257; graduates, 62. The next session begins Sept. 23, 1903, and will close May 5, 1904.

MICHIGAN COLLEGE OF MEDICINE AND SURGERY—SAGINAW VALLEY MEDICAL COLLEGE.—These two schools, organized in 1888 and 1896 respectively, have just been consolidated to continue on the site of the former. The faculties numbered 36 and 30 and are combined. Clinical facilities are offered by a college dispensary, the Emergency Hospital and Detroit Eye and Ear Infirmary. This school is a member of the Association of American Medical Colleges. The course covers graded work for four years of seven months each. The fees are about $80 to $95 per year; third year $70 and $95 for the fourth year. The Dean is Dr. Hal. C. Wyman, 46 W. Adams Ave., Detroit. In the perfecting of the consolidation some of these details may be changed. Total registration for 1902-3 of the Michigan College of Medicine and Surgery was 66; graduates, 19; of the Saginaw Valley Medical College, 85; graduates, 34. The next session begins Sept. 29, 1903, and will end May 1, 1904.

DETROIT HOMEOPATHIC COLLEGE.—This was organized in 1899, and has a faculty of 35. Grace Hospital and a college dispensary are available for study of clinical cases. Unless possessing certificates of an equal amount of work completed, applicants for admission will be examined in English, arithmetic, history, geography and elementary Latin. The course embraces work for four years of seven months each. Fees: From $70 to $90 per year. The Dean is Dr. D. A. MacLachlan. Total enrolment for 1902-3 was 52; graduates, 14. The next session begins September, 1903, and will close April, 1904.

Grand Rapids.

GRAND RAPIDS MEDICAL COLLEGE.—This was organized in 1897. The faculty is made up of 28 professors and 3 assistants, in all 31. Clinical cases in the U. B. A., St. Mary's, and Woman's Butterworth hospitals, and St. John's Orphan Asylum and a college dispensary are available for study. The course is four years of six months each. The total fees are about $65 for each year. The Dean is Dr. C. H. White. Total enrolment for 1902-3 was 52; graduates, 16. Next session opens Oct. 1, 1903, and closes June 1, 1904.

MINNESOTA.

Minnesota, population 1,751,394, contains three medical colleges: Hamline University College of Medicine, and the two medical departments of the University of Minnesota, viz., the College of Medicine and Surgery and the College of Homeopathic Medicine and Surgery. They are all situated in Minneapolis, a city with a population of 225,000. The various hospitals of Minneapolis furnish ample clinical material, and owing to the proximity to St. Paul, the clinical advantages of that city are Medicine and Surgery. They are all situated in Minneapolis, available. The average cost of board and lodging is $20 a month.

Minneapolis.

COLLEGE OF MEDICINE AND SURGERY.—This department of the University of Minnesota was created in 1883, but at that time its only function was to examine for the degrees of B.M. or M.D. In 1888, by the consolidation and absorption of the Minnesota Hospital Medical College and the St. Paul Medical College, its present status was assumed. The faculty is composed of 31 professors and 53 instructors and assistants, a total of 84. The medical school occupies five buildings, and its laboratories are excellent. The last legislature made an appropriation of $105,000 for an additional laboratory of pathology and bacteriology. Eight large hospitals in the Twin Cities, beside the University dispensary and St. Paul dispensary, afford an abundant supply of material for clinical study. The curriculum covers four years of nine months each, and the work is carefully graded. The entrance requirement of one year of university, in addition to four years of high school work, limits the number of students, but assures a high standard of the student body. Total number of students registered in 1902-3 was 315; graduates, 70. Total fees for each year, $100. The Dean is Dr. Parks Ritchie. The next session opens Sept. 1, 1903, and closes June 2, 1904.

COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY.—This is a department of the University of Minnesota and was organized in 1888. The faculty comprises 19 professors and 14 assistants, 33 in all. The primary branches are taught by the professors of the College of Medicine and Surgery. The course is graded, extending over four years of nine months each. The total fees for the first two years are $100 each, and $80 each for the last two years. The Dean is Dr. Eugene L. Mann. Total number of students registered in 1902-3 was 18; graduates, 6. The next session opens Sept. 1, 1903, and closes June 2, 1904.

HAMLINE UNIVERSITY COLLEGE OF MEDICINE.—This was organized in 1883. Its faculty is composed of 23 professors, 17 instructors and assistants, a total of 40. The laboratories and lecture rooms are large, well lighted and supplied with all the necessary equipment. Clinical work is offered to the student in City Hospital, Asbury Methodist Hospital, Swedish, St. Barnabas' and St. Mary's hospitals in Minneapolis, Bethesda Hospital, City and County, and St. Joseph's, in St. Paul, and the college dispensary. This school belongs to the Association of American Medical Colleges. The course of study covers graded work for four years, nine months making a year. Total fees, first year, $85; second year, $87.50, and for each of the last two, $80. The Dean is Dr. George C. Barton. Total number of students 1902-3 was 123; graduates, 34. The next session begins Sept. 15, 1903, and ends June 8, 1904.

MISSOURI.

Missouri, population 3,106,665, has fifteen medical colleges. St. Louis, population 575,238, contains six of these, viz.: St. Louis College of Physicians and Surgeons, American Medical College, Homeopathic Medical College of Missouri, Marion-Sims-Beaumont College of Medicine, Washington University

Medical Department, and Barnes Medical College. Board and lodging can be procured for from $3.50 to $5 a week. Kansas City, with 163,752 inhabitants, has six colleges, namely: Kansas City Medical College, University Medical College, the Hahnemann Medical College of Kansas City, Woman's Medical College, Medico-Chirurgical College and Eclectic Medical University. Room and board can be obtained in this city for from $3 to $5 a week. Ensworth Medical College and Central Medical College are located in St. Joseph, population 105,000; board and room can be had for from $3.50 to $5 a week. Department of Medicine of the University of Missouri is at Columbia, a town of 5651. Board and lodging can be obtained at Columbia for from $2 to $5 a week.

St. Louis.

ST. LOUIS COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1878, and has a faculty of 23 professors, 26 lecturers, instructors, etc., a total of 49. The resources for clinical instruction are Jefferson Hospital, which is open to students of this college only; City Hospital, with 600 beds; Female Hospital, having 250 beds; City Insane Asylum; City Poorhouse, and the college dispensary. This college is a member of the Association of American Medical Colleges. The laboratory and lecture-room space and the equipment are ample. The course of study covers four years of seven months each, and is graded. Total fees for the first year are $70; second, $65; third, $60, and $75 for the fourth year. The Dean is Dr. Waldo Briggs, 2600 Gamble St. Total number of students registered, 1902-3, was 270; graduates, 62. The twenty-fifth session begins Sept. 16, 1903, and ends April 9, 1904.

MARION-SIMS-BEAUMONT MEDICAL COLLEGE.—By the union of Marion-Sims, organized in 1890, and Beaumont Hospital Medical College, organized in 1886, the present school was founded. It is the Medical Department of St. Louis University. The faculty is composed of 40 professors, 55 lecturers and assistants, a total of 95. Clinical facilities are offered by Alexian Brothers' Hospital, with 250 beds; Rebekah Hospital, having a capacity for 50 patients; Josephine Hospital, 50 beds; Mt. St. Rose Throat and Chest Hospital, 150 beds; Good Samaritan Hospital, 50 beds; St. Mary's Infirmary, containing 150 beds; the City Hospital and Insane Asylum, each with a capacity of 600 patients. Grand Avenue Dispensary also furnishes good material for practical instruction. This school is a member of the Association of American Medical Colleges. The buildings afford ample laboratory and lecture-room space and they are well equipped. The course of study embraces laboratory and clinical instruction, with recitations and lectures. The curriculum covers four years of seven months each. The total fees for the first year are $80; for the second and third, $75 each, and $100 for the fourth. The Secretary is Dr. H. W. Loeb, 3559 Olive St. Total number of students registered for 1902-3 was 391; graduates, 88. The next session opens Oct. 1, 1903, and closes May 1, 1904.

WASHINGTON UNIVERSITY MEDICAL DEPARTMENT.—This school was organized in 1891 from the St. Louis Medical College, which was founded in 1842. In 1899 the Missouri Medical College, organized in 1840, was added. The faculty comprises 39 professors, 22 lecturers and instructors, a total of 61. Clinical material is furnished by the St. Louis Mullanphy Hospital, Polyclinic Hospital, Bethesda Hospital and O'Fallon's Dispensary. In addition to these, the City Hospital, Female Hospital, Insane Asylum and Poorhouse are used in common with the other schools. The requirements for admission are higher than those of the Association of American Medical Colleges. The college buildings, of which there are two, furnish the best laboratory and lecture-room facilities. The course is four years of seven and one-half months each, and the system of study embraces laboratory, didactic and clinical teaching. The total fees for the first year are $121; second, $105, and for the third and fourth years, $100 each. The Dean is Dr. Robert Luedeking. Total registration of students for 1902-3 was 281; graduates, 53. The next session opens Sept. 24, 1903, and closes May 19, 1904.

BARNES MEDICAL COLLEGE.—This school was organized in 1892, and has a faculty of 24 professors and 20 lecturers and assistants, a total of 44. The clinical advantages are those offered by Centenary Hospital, with 150 beds; City Hospital, the college dispensary and the outdoor obstetrical department. This college is a member of the Association of American Medical Colleges. The laboratories are well equipped and other facilities ample. The course of study includes graded work for four years of seven months each. The total fees for the first three years are $75 each, and $85 for the fourth year. The Secretary is Dr. Pinckney French, Century Bldg. Total registration for 1902-3 was 495; graduates, 100. The twelfth session opens Sept. 7, 1903, and closes April 21, 1904.

AMERICAN MEDICAL COLLEGE.—Eclectic. This was organized in 1873, and has a faculty of 9 professors and 5 lecturers, etc., a total of 14. Metropolitan Hospital, containing 40 beds; St. Louis City Hospital, and a college dispensary supply ample clinical material. The requirements for admission are those of the National Federation of Eclectic Medical Colleges, of which this college is a member. The course of study covers four years of seven months each. The total fees are: Tuition $75 per year, dissecting material $5 per year for three years, final examination and graduation fee $25. Total registration for 1902-3 was 78; graduates, 18. The Dean is Dr. M. M. Hamlin, 2900 Lawton Ave. The next session opens Sept. 21, 1903, and closes April 13, 1904.

HOMEOPATHIC MEDICAL COLLEGE OF MISSOURI.—This was organized in 1857, and has a faculty of 26 professors and 5 assistants, total 31. Clinical facilities are offered by the City Hospital, Children's Free Hospital and a college dispensary. The curriculum covers four years of seven months each. Fees: First year, $80; second, $75; third, $60, and $85 for the fourth year. The Dean is Dr. L. C. McElwee. Total registration for 1902-3 was 66; graduates, 13. The next session opens September, 1903, and closes April, 1904.

Kansas City.

KANSAS CITY MEDICAL COLLEGE.—This was established in 1869, and has a faculty of 19 professors, and 26 lecturers, demonstrators, etc., in all 45. The clinical facilities are those of St. Joseph's Hospital, which also contains an out-patient department; the City Hospital, Bethany Hospital, Scarritt Hospital, St. Anthony's Home for Children and the college dispensary. This college is a member of the Association of American Medical Colleges. The building is large and well equipped, the course is graded and the classes in practical work are divided into small sections and required to personally conduct series of obstetric, medical and surgical cases as a condition of graduation. The curriculum embraces four years of seven months each. The total fees for the first three years are $75 each, and $85 for the fourth. The Secretary is Dr. R. M. Schauffler, 302 Deardorff Bldg. Total registration for 1902-3 was 122; graduates, 24. The thirty-fifth session begins Sept. 9, 1903, and ends April 13, 1904.

UNIVERSITY MEDICAL COLLEGE.—This was organized in 1881 as the University of Kansas City Medical Department and in 1888 was reorganized under its present name. Its faculty comprises 21 professors and 25 lecturers and assistants, a total of 46. Clinical material is furnished by the University Hospital, owned by the college, with 200 beds; the City Hospital, German Hospital, Home for the Aged, containing 147 beds; the Sisters' Hospital, Scarritt and St. Margaret's hospitals, the Children's Home, St. Joseph's Orphan Asylum, and the college dispensary and obstetric department. Instruction is given by means of lectures, recitations, demonstrations and laboratory work and clinics. The school is a member of the Association of American Medical Colleges. The college building, which has been recently enlarged, furnishes ample accommodations for laboratories and lecture rooms. The course of study covers four years of seven months each, and the work is graded. The total fees for each of the first two years are $80, for the third $60, and $85 for the fourth year. The Dean is Dr. Samuel C. James, Bryant Bldg. The total number of students registered in 1902-3 was 222; graduates, 63. The twenty-third session begins Sept. 9, 1903, and ends April 27, 1904.

WOMAN'S MEDICAL COLLEGE.—This school was organized in 1895, and has a faculty composed of 44 professors, 6 lecturers and assistants, a total of 50. Material for clinical study and demonstration is furnished by St. Joseph's, Scarritt, German, Sisters', Agnew, St. Margaret's and City hospitals, and the college dispensary. The requirements for admission are those of the Association of American Medical Colleges. The course of study embraces graded work for four years of seven months each. The total fees for the first year are $68; second, $60; third, $55, and $80 for the fourth year. The Dean is Dr. Nannie P. Lewis, 1219 Wyandotte St. Total number of matriculants for 1902-3 was 16; graduates, 1. The ninth session opens Sept. 16, 1903, and closes March 24, 1904.

MEDICO-CHIRURGICAL COLLEGE.—This school was organized in 1897 as the Kansas City College of Medicine and Surgery of Kansas City, Kan., and was reorganized the following year under its present name. Its faculty embraces a total of 61. Clinical facilities are furnished by the hospitals of Kansas City, used in common by the medical colleges, and a college dispensary. The course covers four years of six months each. The fees are: For the first year, $70; second, $65; third, $55, and $75 for the fourth year. The Dean is Dr. George O. Coffin, 400 New Ridge Bldg. Total registration for 1902-3 was 83; graduates, 19. The next session opens September, 1903, and closes March, 1904.

KANSAS CITY HAHNEMANN MEDICAL COLLEGE.—This school was formed by the union of the Kansas City Homeopathic Medical College, organized in 1888, and the Kansas City University College of Homeopathic Medicine and Surgery. It has a faculty of 38. The City Hospital, Homeopathic Hospital, the Sanitarium, Scarritt, University, Women's and Children's, German, Bethany and Children's hospitals are open to its students for clinical study. The college dispensary and clinics also supply clinical material. Applicants for admission must show by diploma, certificate or examination that they have a sufficient knowledge of English, arithmetic, geography, United States history, and Latin equal to one year's work. The course covers four years of seven months each. The Dean is Dr. S. H. Anderson, 1214 Main St. Total registration for 1902-3 was 71; graduates, 17. The sixteenth session begins September, 1903, and closes April, 1904.

ECLECTIC MEDICAL UNIVERSITY.—This was organized in 1898, and has 22 in its faculty. The curriculum covers four years of six months each. Fees, about $70 each year, with a graduation fee of $15. The Dean is Dr. Theodore Doyle. Total students for 1902-3 was 61; graduates, 15. The next session begins Sept. 17, 1903, and ends March 25, 1904.

Columbia.

DEPARTMENT OF MEDICINE OF THE UNIVERSITY OF THE STATE OF MISSOURI.—This department was organized at Columbia in 1872. The faculty includes 12 professors, 20 assistants, lecturers, etc., a total of 32. Clinical facilities are supplied by the Parker Memorial State Hospital and the Boone County Infirmary. A new $40,000 building for the medical laboratories has just been completed and has excellent equipment. Special emphasis is laid on thorough training in the scientific branches which constitute the foundation of medicine. Four years' course, nine months each, carefully graded. The university offers also a combined course of six years, conferring degrees in both arts and medicine. The entrance requirements are a diploma from a good high school, or the full equivalent. There is no charge for tuition, the only expense being a library fee of $5 each year, and small laboratory fees. The Dean is Dr. A. W. McAlester. Total registration of students for 1902-3 was 98; graduates, 12. The next session opens September, 1903, and closes June 1, 1904.

St. Joseph.

ENSWORTH MEDICAL COLLEGE.—This was organized in 1888, and has a faculty of 22 professors and 12 lecturers and assistants, 34 in all. Ensworth Hospital, with 250 beds; City Hospital, containing 40 beds; the State Hospital No. 2, which is open to the students once a week, and a college dispensary furnish clinical material. Applicants for admission must show by certificate or examination that they possess a sufficient knowledge of English, arithmetic, algebra, physics and Latin equal to one year's instruc-

tion. The building furnishes ample laboratory and lecture-room facilities. The curriculum covers a graded course of four years of seven months each. The fees are about $55 each for the first three years, and $75 for the fourth year. The Dean is Dr. Jacob Geiger. Total enrolment for 1902-3 was 110; graduates, 14. The next session opens Sept. 1, 1903, and closes March 31, 1904.

CENTRAL MEDICAL COLLEGE.—This school was organized in 1894, and has a faculty of 16 professors and 8 lecturers, in all 24. The Methodist and St. Joseph's hospitals, State Hospital No. 2, and the City and County hospitals are available for clinical study; a college dispensary also supplies clinical material. The requirements for admission are the possession of a high school diploma, or its equivalent, or an examination. The curriculum embraces four years of seven months each. Fees: First year, $55; second, $50; third $50, and $75 for the fourth year. The Secretary is Dr. C. A. Tygart. Total enrolment for 1902-3 was 80; graduates, 23. The next session begins Sept. 1, 1903, and will end April 1, 1904.

NEBRASKA.

Nebraska, population 1,066,300, has three medical colleges: The University of Nebraska College of Medicine and John A. Creighton Medical College in Omaha (population 102,555); and Lincoln Medical College, at Lincoln (population 40,169). Board and lodging can be obtained for from $3 to $5 a week.

Omaha.

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE.—This was organized in 1880 as the Omaha Medical College. In 1902 an affiliation was entered into with the University of Nebraska, the name being changed to the College of Medicine of the University of Nebraska. As soon as practicable, the first two years will be given only at Lincoln, though at present these courses are given both at Lincoln and at Omaha. The last two years are given only at Omaha. The faculty is composed of 35 professors and 20 lecturers and assistants, total 55. The Douglas County, Immanuel, Wise Memorial, and Omaha Methodist hospitals, together with the college dispensary, furnish an abundance of material for clinical study and demonstration. The course consists of graded studies covering four years of eight months each. The method of instruction consists of didactic and clinical lectures, section clinics, demonstrations, recitations and laboratory work. The college building is well adapted to its purpose, the laboratories being well equipped and the lecture rooms commodious. The fees, including breakage deposits, are $90 for the first two years, and $95 and $90 for the last two years respectively. Total number of students enrolled in 1902-3, 138; graduates, 38. The college is a member of the Association of American Medical Colleges. The Secretary is Dr. Paul H. Ludington, Bee Building. The twenty-third annual session will begin Sept. 22, 1903, and end May 26, 1904.

JOHN A. CREIGHTON MEDICAL COLLEGE.—This school, organized in 1892, is the Medical Department of Creighton University, and has a faculty of 27 professors and 16 associates, lecturers and assistants, a total of 43. The clinical facilities are those of St. Joseph's Hospital, containing 300 beds and having a clinical amphitheater connected with it; St. Bernard's Hospital, with 256 beds; Douglas County Hospital, Presbyterian and Mercy hospitals, and the college dispensary; the material is abundant and varied. The school is a member of the Association of American Medical Colleges. The building, which was completed in 1898, contains excellent facilities for laboratory and lecture-room work, and the equipment is good. In the methods of instruction, including clinical, didactic and laboratory work, special emphasis is laid on practical work. The course of study embraces four years of seven and one-half months each. The total fees for the first two years are $80 each, and $85 for each of the last two years. The Dean is Dr. D. C. Bryant, McCague Bldg. Total number of students registered in 1902-3 was 142; graduates, 29. The eleventh session opens Sept. 22, 1903, and closes May 1, 1904.

Lincoln.

LINCOLN MEDICAL COLLEGE.—Eclectic. This was organized in 1889 and has a faculty of 27. The requirements for admission are those of the National Confederation of Eclectic Medical Colleges, of which this college is a member. The course of study covers four years of thirty-two weeks each. The total fees for the first year are $80; second, $75; third, $75, and $85 for the fourth year, or $255 for all four years together. The Secretary is Dr. M. B. Ketchum. Total number of students for 1902-3 was 86; graduates, 16. The next session begins Sept. 15, 1903, and ends April 20, 1904.

NEW HAMPSHIRE.

New Hampshire, population 411,588, contains one medical college, located in Hanover, population 1884.

Hanover.

DARTMOUTH MEDICAL SCHOOL.—This is the Medical Department of Dartmouth College, and was organized in 1797. Its faculty is made up of 17 professors and 6 instructors, 23 in all. The Mary Hitchcock Memorial Hospital, a cottage hospital of 36 beds, supplies the clinical material. Applicants for admission must possess an education at least equivalent to graduation from a registered high school. The laboratories afford good facilities for work. The course covers four years of thirty-two weeks each. Fees: $125 each year. The Dean is Dr. William T. Smith. The total number of students registered for 1902-3 was 65; graduates, 14. The work for the first and second years begins with that of the academic department, commencing Sept. 24, 1903, and closing April and June, 1904, respectively; for the advanced classes it begins July 14, 1903, and ends in February, 1904.

NEW YORK.

New York State, population 7,268,894, has ten medical colleges. Seven of these, College of Physicians and Surgeons, Long Island College Hospital, New York Homeopathic Medical College and Hospital, New York Medical College and Hospital for Women, Eclectic Medical College of the City of New York, Cornell University Medical College and the University and Bellevue Hospital Medical College, are located in New York City, population 3,437,202. This city, with its hospitals and dispensaries, offers abundant clinical material. Board and lodging can be obtained for from $5 to $7 a week.

Albany Medical College is in Albany, a city of 100,000 people, where board and room can be had for from $4 to $5 a week.

The University of Buffalo Medical Department is situated in Buffalo, population 352,387; here board and lodging can be obtained for from $3.50 to $5 per week.

The College of Medicine, Syracuse University, is in Syracuse, a city with 108,374 inhabitants. Board and lodging can be procured for from $3.50 a week upward.

The laws of the state of New York require of the prospective student of medicine a preliminary education equivalent to that obtainable in a four years' course in any of the public high schools recognized by the regents as maintaining a satisfactory standard. On proof of at least this amount of education, a medical-student certificate will be issued by the state authorities. The colleges, therefore, have a common standard for the requirements of admission.

New York City.

COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1807 and its present relation, that of Medical Department of Columbia University, was assumed in 1860. The faculty embraces 37 professors and 77 demonstrators, instructors, etc., a total of 114. The Vanderbilt Clinic, where 45,338 patients were treated during the year 1902, and which is equipped with all modern appliances for the study and treatment of disease, and Sloane Maternity Hospital, containing 116 beds, offer exclusive clinical advantages to students of this school. Beside these, Roosevelt Hospital, containing 238 beds; New York Hospital, with 150 beds; Bellevue, 900 beds; Presbyterian, 350 beds; St. Luke's, 225 beds; General Memorial, 100 beds, and New York Foundling hospitals, together with the Eye and Ear Institute, containing 40 beds; Willard Parker and Reception hospitals, 200 beds; Babies' Hospital, 50 beds; St. Mary's Free Hospital for Children, 120 beds, and the Hospital for Ruptured and Crippled, 250 beds, all offer free clinical teaching to matriculants of this school. The laboratories, lecture rooms and amphitheaters are ample in equipment and accommodation; special provisions are made to equip each student thoroughly in each of the laboratories and thus make the work individual. The work is graded, covering four years of eight months each. The total fees for the first year are $205; for the second and third, $200, and $225 for the fourth year. Total registration for 1902-3 was 795; graduates, 168. The next session begins Sept. 23, 1903, and ends June 8, 1904.

LONG ISLAND COLLEGE HOSPITAL.—This was organized in 1858 and has a faculty of 9 professors and 64 assistants, instructors, etc., a total of 73. Long Island College Hospital, containing 300 beds and connected with a four-story maternity hospital; Polhemus Memorial Clinic, and Hoagland Laboratory, completely equipped with the most modern apparatus, are all a part of the college. Beside the clinical facilities furnished by these, members of the faculty attend at Kings County, St. John's, Brooklyn, Norwegian, Williamsburg, Methodist Episcopal and the Brooklyn Eye and Ear hospitals, where the students are offered opportunities for clinical study. Many of these also contain out-patient departments, thus permitting advanced students to attend personally to cases. Bedside instruction is also given in the wards. The course covers four years of thirty weeks each. Fees: First year, $195; second, $200; third, $160, and $195 for the fourth year. The Secretary is Dr. Joseph H. Raymond. Total registration, 1902-3, was 290; graduates, 40. The forty-sixth session opens Oct. 1, 1903, and closes May 15, 1904. The summer session opens May 11, 1904, and closes Aug. 11, 1904.

CORNELL UNIVERSITY MEDICAL COLLEGE.—This department of Cornell University was established in 1898. The faculty is composed of 39 professors and 103 instructors and assistants, a total of 142. The City Hospital, having 1,000 beds; Bellevue Hospital, New York Hospital, Presbyterian, Willard Parker and Reception, with 200 beds; New York Skin and Cancer; St. Francis having a capacity of 230 beds; St. Vincent's, with 200 beds; the Manhattan Eye and Ear Infirmary, in addition to a large college dispensary, furnish the clinical resources; the material is abundant and varied. The first two years of the course are taken at New York or at Ithaca and the work is devoted to the fundamental scientific subjects. The last two years are spent mostly in practical and clinical work and the hospital advantages are utilized. The Loomis Laboratory, a five-story modern building, is well equipped and supplies ample practical laboratory facilities required in the advanced work. "The essential feature of the entire system is the division of the classes of the several years into small sections." Fees: First year, $190; second and third, $180 each, and $200 for the fourth year. The Dean is Dr. William M. Polk. Total registration for 1902-3 was 394; graduates, 60. The next session opens Sept. 30, 1903, and closes June 8, 1904.

UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE.—This is a department of the New York University, and was founded in 1898 by the union of the New York University Medical College, organized in 1841, and the Bellevue Hospital Medical College, organized in 1861. The faculty is composed of 26 professors and 81 instructors, assistants, etc., in all 107. Bellevue and City hospitals,

hospitals of the Workhouse and Almshouse, Manhattan State Hospital for the Insane, Willard Parker and Reception hospitals, Riverside Hospital for Contagious Diseases, Randall's Island, Presbyterian, St. Luke's, St. Vincent's, General Memorial, Gouverneur, Columbus, Harlem, New York Foundling, and the Society for the Lying-in hospitals, the New York Eye and Ear Infirmary, and a large college dispensary are open to students of this school for a study of clinical cases. The Carnegie building, a new five-story structure adjoining the college, is devoted to laboratory instruction and investigation, and, with the other two large college buildings, affords good laboratory and lecture-room facilities. The course of instruction covers four years of eight months each. Actual clinical teaching, in conjunction with and founded on laboratory work, recitation and didactic teaching, is emphasized to the greatest possible degree. Fees: First year, $185; second and third, $180 each, and $195 for the fourth year. The Dean is Dr. Edward G. Janeway. Total registration for 1902-3 was 311; graduates, 73. The next session opens Sept. 30, 1903, and closes June, 1904.

NEW YORK HOMEOPATHIC MEDICAL COLLEGE AND HOSPITAL.—This school, organized in 1861, has a faculty of 29 professors and 33 lecturers, instructors, etc., 62 in all. Flower Hospital, adjoining the college and having a completely equipped out-patient department, Metropolitan, Hospital, New York Ophthalmic Hospital and the Laura Franklin Free Hospital for Children furnish the clinical facilities. The course covers four years of seven months each. Total fees for the first year, $110; second, $130; third, $125, and $155 for the fourth year. The Dean is Dr. W. H. King, 64 W. 51st St. Total students registered for 1902-3 was 111; graduates, 29. The next session begins Oct. 6, 1903, and ends May 12, 1904.

NEW YORK MEDICAL COLLEGE AND HOSPITAL FOR WOMEN.—Homeopathic. This school was organized in 1863, and has a faculty of 24 professors, 20 lecturers and assistants, total, 44. The college hospital and dispensary, the Memorial Hospital for Women, Metropolitan, Flower and the Laura Franklin Free Hospital for Children afford clinical material. The course covers four years of twenty-six weeks each. Fees: First year, $155; second, $135; third, $125, and $155 for the fourth year. The Dean is Dr. M. Belle Brown, 30 W. 51st St. Total registration for 1902-3 was 34; graduates, 8. The next session opens Sept. 29, 1903, and closes May 13, 1904.

ECLECTIC MEDICAL COLLEGE OF THE CITY OF NEW YORK.—This was organized in 1865 and has a faculty of 15 professors and 15 lecturers, demonstrators, etc., 30 in all. A college dispensary, Beachonian Dispensary, Manhattan and Red Cross hospitals and Muncie Sanatorium supply clinical facilities. The work covers four years of seven months each. The total fees: First year, $125; second, $125; third, $125, and $155 for the fourth year. The Dean is Dr. George W. Boskowitz. Total registration for 1902-3 was 104; graduates, 13. The next session opens Sept. 23, 1903, and closes May, 1904. This school is a member of the National Confederation of Eclectic Medical Colleges.

Albany.

ALBANY MEDICAL COLLEGE.—This school was organized in 1838, and in 1873 it assumed its present relations, as Medical Department of Union University. The faculty is composed of 19 professors and 45 lecturers, instructors and assistants, a total of 64. Albany, St. Peter's, Child's and County hospitals, South End Dispensary, Eye and Ear Infirmary and the Albany Hospital for Incurables, also the free dispensaries connected with each, are open to students for clinical study. The curriculum embraces graded work for four years of seven and one-half months each. Teaching is carried on in the laboratories, clinics and lecture rooms. Examinations are held twice a year in all subjects. Fees: Third year, $110, and $130 for each other year. The Dean is Dr. Albert Vander Veer. Total registration for 1902-3 was 165; graduates, 33. The next annual session opens Sept. 22, 1903, and closes May 3, 1904.

Buffalo.

UNIVERSITY OF BUFFALO MEDICAL DEPARTMENT.—This was organized in 1846 and has a faculty made up of 48 professors and 31 assistants, lecturers, etc., a total of 79. Buffalo General Hospital, Hospital of the Sisters of Charity, Erie County and German hospitals and the German Deaconess' Hospital supply amply clinical material for study. A college dispensary, recently organized, is also of value in practical work. The buildings and hospitals are well equipped for clinical and laboratory work. Bedside instruction is insisted on and the senior students are permitted to assist in operations and give anesthetics. This school is a member of the Association of American Medical Colleges. The course covers four years of seven months each. The total fees are: First year, $455; second, $55, and $15 each for the third and fourth years. The Dean is Dr. Matthew D. Mann, 37 Allen St. Total registration for 1902-3 was 237; graduates, 45. The fifty-eighth session opens Sept. 28, 1903, and closes May 3, 1904.

Syracuse.

COLLEGE OF MEDICINE, SYRACUSE UNIVERSITY.—This school was organized in 1872 as the Medical Department of Syracuse University. The faculty is composed of 16 professors and 34 lecturers, instructors, etc., in all 50. Clinical facilities are furnished by St. Joseph's Hospital, with a capacity of 200 patients; Hospital of the House of the Good Shepherd, Syracuse Hospital for Women and Children, Onondaga County Orphan Asylum, and the Syracuse Free Dispensary. The laboratories and amphitheaters are large and well equipped. This school is a member of the Association of American Medical Colleges. The curriculum embraces a four years' graded course, eight months making a school year. The total fees for each of the four years are $130. The Dean is Dr. Henry D. Didama, 424 S. Salina St. Total number of students registered for 1902-3 was 140; graduates, 29. The next session opens Oct. 6, 1903, and closes June 9, 1904.

NORTH CAROLINA.

North Carolina, population 1,893,810, has three medical schools which grant degrees and one which gives only the first two years of the medical course. The Medical Department of the University of North Carolina is located at Chapel Hill (population 1,099) and at Raleigh (population 13,643). The Leonard School of Medicine is at Raleigh. The North Carolina Medical College is located at Davidson (population 904). Wake Forest School of Medicine is at Wake Forest (population 823).

Chapel Hill and Raleigh.

UNIVERSITY OF NORTH CAROLINA MEDICAL DEPARTMENT.—This school was organized in 1891, and formerly gave only the work of the first two college years, at Chapel Hill. In 1902 the course was extended to four years by the establishment of a department at Raleigh in which the last two years are given. Degrees will now be conferred, and the faculty in the completed school of medicine numbers 25. It is a member of the Association of American Medical Colleges. The number of students enrolled in 1902-3 was 83; graduates, 4. Total fees are $85 per year. Board, room, light and heat may be had for from $84 to $102 per college year. The President is Dr. F. P. Venable, Chapel Hill. The next session will begin Sept. 7, 1903, and end June, 1904.

Raleigh.

LEONARD SCHOOL OF MEDICINE.—This department of Shaw University was established in 1882 by the American Baptist Home Mission Society to train colored students of medicine. It has a faculty of 11. A free hospital and dispensary supply clinical material. A preliminary entrance examination is given to applicants not possessing a certificate or diploma of educational requirements. The course covers four years of six months each. The total fees for each year are $75. The dormitory plan is adopted generally, and board and room costs $2 a week. The Dean is Dr. James McKee. Total enrolment for 1902-3 was 113; graduates, 23. Next session opens Oct. 1, 1903, and closes April 14, 1904.

Davidson.

NORTH CAROLINA MEDICAL COLLEGE.—This school was organized in 1893 and has a faculty of 19. A small hospital supplies the clinical facilities. The course covers four years of eight months each. Fees: First three years, $85 each, and $100 for the fourth year. The president is Dr. J. P. Monroe. The total registration for 1902-3 was 67; graduates, 10. The next session begins September, 1903, and closes May, 1904.

Wake Forest.

WAKE FOREST SCHOOL OF MEDICINE.—This school was organized in 1902. It only gives the first two years of the medical course. It has a faculty of 5, and last year enrolled 10 students. The fees are $85 a year. The President is Dr. C. E. Taylor, Wake Forest.

OHIO.

Ohio, population 4,157,545, has ten medical colleges. Four of these, the Medical College of Ohio, Eclectic Medical Institute, Miami Medical College, and Pulte Medical College are located in Cincinnati, a city of 325,902 inhabitants. The clinical advantages of Cincinnati are good; beside many smaller hospitals, the Cincinnati Hospital is open to the students for study. Board can be procured in Cincinnati for from $3 to $5 per week. The Laura Memorial Woman's Medical College has ceased to exist.

Cleveland, population 381,768, contains three medical schools: Western Reserve University Medical College, Cleveland College of Physicians and Surgeons and the Cleveland Homeopathic Medical College. The City Hospital, with 275 beds, is used in common by them for clinical study. Board and lodging can be had for from $2.50 to $5 a week.

Columbus, population 125,560, contains two: Starling Medical College and Ohio Medical University. Board and lodging cost from $2.50 to $5 per week.

Toledo, with 131,822 people, has one medical school: Toledo Medical College. It has good clinical advantages. Board and room can be had for from $3 to $5 per week.

The laws of Ohio require that in order to practice medicine in this state, any student not possessing a diploma or certificate showing that he is possessed of the educational advantages required, must pass a satisfactory examination, under the direction of the State Board of Medical Registration and Examination, in the following subjects: Foreign languages—Two years of the Latin language. English—English literature, composition and rhetoric. History—United States history and civics, with reference to the constitutional phases of American history. Mathematics—Algebra through equations and plane geometry. Science—Botany or zoology; physiography or chemistry, and physics. This is the standard adopted by all the medical colleges in the state.

Cincinnati.

MEDICAL COLLEGE OF OHIO.—This is the Medical Department of the University of Cincinnati, organized in 1819, and has a faculty

made up of 24 professors, 26 lecturers and assistants, a total of 50. Good Samaritan Hospital, with 100 beds; Cincinnati Hospital, with 550 beds, and a well-equipped college dispensary furnish clinical facilities. The buildings supply ample laboratory and lecture-room space, and their equipment is good. The course of study is graded and covers four years of eight months each. This school is a member of the Association of American Medical Colleges. The lecture fees are $125 each year for each student entering after July 1, 1903; $100 each year for those who have matriculated prior to July 1, 1903. In addition there is a matriculation fee of $5, payable but once, and a graduation fee of $25. Total registration of students for 1902-3 was 170; graduates, 54. The Dean is Dr. P. S. Conner, Cincinnati. The eighty-fifth session begins Sept. 24, 1903, and ends May, 1904.

MIAMI MEDICAL COLLEGE.—This school was organized in 1852 and has a faculty of 23 professors and 24 lecturers and demonstrators, a total of 47. The clinical facilities are furnished by the Cincinnati Hospital and a college dispensary. The Presbyterian Hospital, with the Laura Memorial Dispensary, has become a clinical department of the college. The undergraduates of the Laura Memorial College will continue their studies in the Miami College. This college is a member of the Association of American Medical Colleges. The curriculum embraces a four-year graded course of eight months each. The total fees are, for the first year, $130; for the second and third, $125, and $150 for the fourth year. The Dean is Dr. J. C. Oliver, 628 Elm St. The total registration for 1902-3 was 106; graduates, 40. The next session opens Oct. 1, 1903, and closes June 1, 1904.

ECLECTIC MEDICAL INSTITUTE.—This school, organized in 1845, has a faculty of 29 members. The Seton Hospital, Cincinnati Hospital, and a college dispensary furnish clinical material. It is a member of the National Confederation of Eclectic Medical Colleges. The course covers four years of thirty weeks each. The fees are $75 for each year, with a graduation fee of $25. The Dean is Dr. F. J. Locke, Newport, Ky. Total enrolment, 1902-3, was 146; graduates, 45. The next session begins Sept. 21, 1903, and closes April 19, 1904.

PULTE MEDICAL COLLEGE.—Homeopathic. This was organized in 1872 and has a teaching force of 18 professors and 14 assistants, 32 in all. Pulte Hospital, Cincinnati Hospital, Bethesda Hospital, Home of the Friendless and Foundlings, and a college dispensary supply clinical material. The curriculum covers four years of seven months each. Fees: First year, $80; for the second and third, $75 each, and $100 for the fourth. The Dean is Dr. J. D. Buck. Total enrolment for 1902-3 was 30; graduates, 10. The next session opens Sept. 29, 1903, and closes May 3, 1904.

Cleveland.

WESTERN RESERVE UNIVERSITY MEDICAL COLLEGE.—The Medical Department was organized in 1843. Its teaching faculty includes 21 professors, 30 lecturers, demonstrators and assistants, a total of 51. Clinical facilities are offered students of this school by Lakeside Hospital, having 250 beds; St. Vincent's Hospital, having about 150 beds; City Hospital, with 250 beds; St. Alexis Hospital with 250 beds, and the Home of Maternity, with the dispensary service at Lakeside and Charity hospitals. The laboratory chairs are endowed, the teachers devoting their entire time to teaching and research work. The new clinical laboratory has recently been added, where a systematic course of instruction is given. This college is a member of the Association of American Medical Colleges. The curriculum embraces four years of eight months each. Three years of college work are required for admission to first year of medical course. The total fees are $125 for each year. The Dean is Dr. B. L. Millikin, 278 Prospect St. Total enrolment for 1902-3 was 97; graduates, 26. The next session begins Oct. 1, 1903, and closes June 16, 1904.

THE CLEVELAND COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1863 as Charity Hospital Medical College, became the Medical Department of Wooster University in 1869, and the Medical Department of the Ohio Wesleyan University in 1896, when it assumed its present name. The faculty is composed of 27 professors, 36 lecturers, assistants, instructors, etc., 63 in all. Cleveland General Hospital, Cleveland City Hospital and a college dispensary are used for regular clinical teaching. St. Alexis, St. John's and St. Clair hospitals are utilized for extra-mural clinics. This school is a member of the Association of American Medical Colleges. The school is co-educational. The total annual fees are $120. The curriculum covers four years of eight months each. The Dean is Dr. N. Stone Scott, 604 Citizen's Bldg. Total enrolment for 1902-3 was 86; graduates, 22. The next term opens Sept. 16, 1903.

CLEVELAND HOMEOPATHIC MEDICAL COLLEGE.—This school was founded in 1897 by a consolidation of Cleveland University of Medicine and Cleveland Medical College, the former of which was incorporated in 1850, and is the second oldest homeopathic medical college in the United States. The faculty includes 27 professors and 29 adjuncts, lecturers, etc., 56 in all. The clinical facilities are obtained from the Cleveland Homeopathic Hospital, the Cleveland City Hospital, the Cleveland Maternity Hospital and a college dispensary. The course embraces four years of thirty weeks each. Fees: First year, $110; second and third years, $105 each, and $125 for the fourth year. The Dean is Dr. Galus J. Jones. Total number of students registered, 1902-3, was 115; graduates, 40. The next session opens Sept. 21, 1903, and closes May 4, 1904.

Columbus.

STARLING MEDICAL COLLEGE.—This school was organized in 1847 and has a faculty composed of 20 professors and 16 lecturers, associates, etc., a total of 36. St. Francis Hospital, which is under the control of this faculty, Hawkes' Hospital of Mt. Carmel, the Lawrence Hospital, and a college dispensary are available for clinical study. This college is a member of the Association of American Medical Colleges. The work covers four years of thirty-two weeks each. Fees: $100 per year; graduation fee, $10. The Dean is Dr. Starling Loving. Enrolment for 1902-3 was 163; graduates, 49. The next session opens Sept. 16, 1903, and closes May 3, 1904.

OHIO MEDICAL UNIVERSITY.—This school was organized in 1890 and has a faculty of 23 professors and 11 assistants, 34 in all. The Protestant Hospital, State Hospital, Ohio Penitentiary Hospital, and a college dispensary provide material for clinical work. This school is a member of the Association of American Medical Colleges. The course is four years of 32 weeks each. Fees: First year, $105; second year, $100; third year, $100, and $110 for the fourth year. The Dean is Dr. George M. Waters. Total students for 1902-3 was 214; graduates, 58. The next sessions begin Sept. 16, 1903, and ends April 28, 1904.

Toledo.

TOLEDO MEDICAL COLLEGE.—The school was organized in 1882 and has a faculty of 17 professors, 21 lecturers and assistants, in all 38. Toledo Hospital, St. Vincent's and Robinwood hospitals, Lucas County Infirmary Hospital, Toledo Hospital for the Insane, and a free dispensary supply clinical facilities. This college is a member of the Association of American Medical Colleges. The curriculum embraces four years of eight months each. The fees are $75 for each year with a matriculation fee of $5, payable once. The Secretary is Dr. Park L. Myers, 1921 Franklin Ave. Total enrolment for 1902-3 was 41; graduates, 14. The next session opens Sept. 24, 1903, and closes May 12, 1904.

OREGON.

Oregon, population 413,536, has two medical colleges: Medical Department Willamette University, located in Salem, a city of 4,258 people, and University of Oregon Medical Department, in Portland, a city of about 100,000 population. Board and lodging may be obtained in Salem for from $3 to $5 per week and in Portland for from $4 to $6.

Salem.

MEDICAL DEPARTMENT WILLAMETTE UNIVERSITY.—This school was organized in 1864. The faculty consists of 16 teachers. Clinical facilities for study are supplied by Salem Hospital, and a college dispensary. This school is a member of the Association of American Medical Colleges. The course embraces four years' work of six months each. Fees: First year, $110; second, $100; third, $75, and $50 for the fourth year. The Dean is Dr. W. H. Byrd. Total enrolment for 1902-3 was 40; graduates, 7. The next session begins Oct. 1, 1903, and ends April 2, 1904.

Portland.

UNIVERSITY OF OREGON MEDICAL DEPARTMENT.—This department of the State University was organized in 1887 and has a faculty of 14 professors and 13 assistants, lecturers, etc., a total of 27. Good Samaritan and St. Vincent's hospitals, containing 200 and 350 beds, respectively, furnish good material for clinical study. The requirements for admission are those of the Association of American Medical Colleges, but the members of the faculty do not hold examinations for entrance. The college building is modern and well equipped, presenting ample teaching facilities. The course is four years of seven months each. Fees: First year, $142.50; second, $137.50; third, $107.50, and for the fourth, $57.50. The Dean is Dr. Simeon E. Josephi, Portland. Total number of students for 1902-3 was 88; graduates, 10. The next session opens Sept. 16, 1903, and closes April 18, 1904.

PENNSYLVANIA.

Pennsylvania, population 6,302,115, has seven medical colleges. Of these Philadelphia, having a population of 1,293,697, contains six, as follows: University of Pennsylvania Department of Medicine, Jefferson Medical College, Hahnemann Medical College, Woman's Medical College of Pennsylvania, Medico-Chirurgical College of Philadelphia, and Temple College Department of Medicine. The clinical facilities of Philadelphia present abundant and varied material for study. Beside the individual hospitals connected with each of the schools the charity hospitals are open to all the students in common. Board and lodging costs from $4 a week upward.

The other school, Western Pennsylvania Medical College, is situated in Pittsburg, a city of 321,616 people. The cost of board and lodging is from $4 to $6 a week.

A preliminary examination is required of all applicants for a license to practice medicine or surgery in the state. This examination is held at stated intervals by the state examiners, and includes: (a) English composition, grammar and rhetoric; (b) mathematics, covering algebra and plane geometry; (c) elementary physics; (d) United States history, and (e) Latin equivalent to a year's study. On passing a successful examination a medical student certificate is issued to the applicant. This certificate will admit the possessor to matriculation in any medical college in the state.

Philadelphia.

UNIVERSITY OF PENNSYLVANIA DEPARTMENT OF MEDICINE.—This is the first medical college established in this country, having been organized in 1765 as the Medical Department of the College of Philadelphia; the first degrees were granted in 1768. When from the College of Philadelphia the University of Pennsylvania was organized, in 1791, it became the Medical Department of the University, its present relation. The faculty is made up of 25 professors and 78 assistants, lecturers, etc., a total of 103. Abundant and varied clinical material is furnished by the University Hospital.

capacity 300 beds, which treats over 14,000 cases annually; University Maternity Pavilion, with 50 beds; Philadelphia Hospital, containing 1,000 beds; Pennsylvania, Children's and the Southeastern Hospital and Dispensary. Special attention is paid to bedside instruction and to thoroughly practical work. Applicants for admission must furnish evidence of the education required to enter the academic department of the university. The buildings known as Medical Hall, Laboratory Hall and the Laboratory of Hygiene, the laboratories of pathology, physiology and pharmaco-dynamics, and the Wistar Institute of Anatomy, and the Wm. Pepper Clinical Laboratory supply excellent laboratory and lecture-room facilities and are well equipped. The course embraces study for four years of nine months each. The total fees for each year are $200, with a matriculation fee of $5 for the first year. The Dean is Dr. Charles H. Frazier. Total enrolment for 1902-3 was 469; graduates, 111. The next session opens Sept. 25, 1903, and closes June 15, 1904.

JEFFERSON MEDICAL COLLEGE.—This school was organized in 1825, and has a faculty of 27 professors and 75 lecturers, demonstrators, etc., a total of 102. Jefferson Hospital, together with its Maternity Department, are used exclusively by students of the school for clinical study. Bedside instruction is given daily to small sections of the senior class. In addition, the following hospitals are open for study of clinical cases: Pennsylvania, Philadelphia, St. Joseph's, German, Municipal and Wills Eye hospitals. This college is a member of the Association of American Medical Colleges. The course of study covers graded work of four years of eight months each. The laboratories are large and well equipped, a new five-story laboratory building having recently been added; the lecture rooms and amphitheaters are also ample. A new fire-proof hospital is now building, to cost $700,000, to be finished in 1905. The tuition is $180 a year, with a matriculation fee of $5, paid but once. The Dean is Dr. James W. Holland. The total number of students for 1902-3 was 771; graduates, 166. The next session opens Sept. 24, 1903, and closes May 27, 1904.

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA.—This school was organized in 1850, and has a faculty of 31 professors and 42 assistants, lecturers, etc., in all 53. Clinical facilities are offered exclusively to this college by the Woman's Hospital and West Philadelphia Hospital for Women. Other clinical advantages offered are those of the Pennsylvania, German, Children's and Philadelphia hospitals, Wills Hospital for Diseases of the Eye and the Philadelphia Lying-in Charity. This school is a member of the Association of American Medical Colleges. The lecture-room and laboratory equipment is good. The curriculum covers four years of eight months each. Fees: First year, $140; second, $145; third, $135.50, and $100.50 for the fourth year. The Dean is Dr. Clara Marshall. Total enrolment for 1902-3 was 165; graduates, 30. The fifty-fourth session begins Sept. 23, 1903, and will end May 18, 1904.

MEDICO-CHIRURGICAL COLLEGE OF PHILADELPHIA.—This school was organized in 1881 and has a faculty made up of 29 professors and 48 assistants, lecturers, etc., 77 in all. Opportunities for clinical study are offered exclusively to students of this school by the Medico-Chirurgical Hospital, with 130 beds, and its children's hospital, containing 40 beds, and maternity hospital having 40 beds. In common with other schools the following are used: Philadelphia, Pennsylvania, German, Samaritan, St. Joseph's, St. Agnes', St. Mary's, Methodist and the Philadelphia Lying-in hospitals. This school is a member of the Association of American Medical Colleges. With new laboratories, lecture rooms, a modern hospital and fine clinical amphitheater this college is amply provided and the equipment is good. The work embraces four years of eight months each. Fees: $150 per annum; matriculation, $5, payable once. The Dean is Dr. Seneca Egbert. Total enrolment for 1902-3 was 431; graduates, 93. The next session opens Sept. 28, 1903, and will close May 28, 1904.

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL.—Homeopathic. This was organized in 1848 and has a faculty of 16 professors and 40 lecturers, instructors, etc., in all 56. Hahnemann College Hospital and Pennsylvania Hospital furnish material for clinical work. The requirements for admission are those established by the Intercollegiate Committee of the American Institute of Homeopathy. The work covers four years of thirty-two weeks each. Fees: For each year, $150; matriculation, $5. Total number of students for 1902-3 was 233; graduates, 69. The Dean is Dr. Charles M. Thomas. The next session begins Sept. 21, 1903, and will end May 21, 1904.

TEMPLE COLLEGE DEPARTMENT OF MEDICINE.—This department was organized in 1901, and has a faculty of 37. Instruction is given in the afternoon and evening. The fees are $125 per year. The Dean is Dr. W. Wallace Fritz. The enrolment for 1902-3 was 70; graduates, none. The next session begins Sept. 14, 1903, and ends June 14, 1904.

Pittsburg.

WESTERN PENNSYLVANIA MEDICAL COLLEGE.—This is the Medical Department of the Western University of Pennsylvania, and was organized in 1886. The faculty is composed of 31 professors and 39 associates, assistants, etc., 70 in all. Clinical material for study is furnished by a college dispensary, and the Emma Kaufman Clinic, Reineman Maternity Hospital, Mercy, South Side, Passavant and St. John's hospitals. This school is a member of the Association of American Medical Colleges. The course of study embraces graded work for four years of eight months each. Special attention is given to practical bedside work. The total fees are $150 for each year. The Dean is Dr. J. C. Lange. Total enrolment for 1902-3 was 317; graduates, 79. The next session begins Oct. 1, 1903, and will close May, 1904.

SOUTH CAROLINA.

South Carolina, population 1,340,316, has one medical college, situated in Charleston, a city of 55,807 people. Board and room can be obtained for from $12 to $16 a month.

Charleston.

THE MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA.—This was founded in 1823. The faculty is made up of 10 professors and 11 assistants, etc., 21 in all. The clinical facilities are those offered by the City Hospital, where surgical, obstetrical and medical instruction is given. Applicants for matriculation must show a diploma of graduation from some literary or scientific institution of learning or a certificate from some legally constituted high school. The course covers four years of six months each. The total fees for each of the first two years are $100, and $75 each for the last two. The Dean is Dr. Francis L. Parker. Total enrolment for 1902-3 was 95; graduates, 21. The next session opens Oct. 1, 1903, and closes April 5, 1904.

TENNESSEE.

Tennessee, population 2,020,616, has twelve medical colleges. Of these the Medical Department of the University of Nashville, Vanderbilt University Medical Department, University of Tennessee Medical Department, Meharry Medical College and Southwestern Presbyterian University Medical Department are situated in Nashville, a city with a population of 80,865. The City Hospital, containing 100 beds, is used by all the schools in common for clinical study. Board and lodging cost from $3 to $4 a week.

Knoxville, population 32,637, contains two colleges, Tennessee Medical College and Knoxville Medical College. The cost of room and board in that city is from $2.50 to $4 a week.

Chattanooga Medical College and Chattanooga National Medical College are situated in Chattanooga, a city of 30,154 people. Board and lodging cost there from $2 a week upward.

Memphis Hospital Medical College is located in the growing city of Memphis, population 102,320. Good board can be obtained for from $3 to $4 a week.

The University of West Tennessee is in Jackson, whose population is 15,000.

The other school, the Sewanee Medical College, is located at Sewanee, a mountain town of 1,200 people.

Nashville.

MEDICAL DEPARTMENT UNIVERSITY OF NASHVILLE.—This school, established in 1850, has a faculty of 13 professors and 14 lecturers, assistants, etc., in all 27. This school is a member of the Southern Medical College Association. The course of study covers four years of twenty-six weeks each. The total fees for each of the four years are $65. The Dean is Dr. William G. Ewing. Total enrolment for 1902-3 was 317; graduates, 50. The next session begins Oct. 1, 1903, and ends March 31, 1904.

VANDERBILT UNIVERSITY MEDICAL DEPARTMENT.—This school was founded in 1874, and in 1895, when the present medical building was completed, the course was extended, the standard raised, and the present faculty of 35, consisting of 18 professors and 17 associates, lecturers, etc., was appointed. The school is a member of the Southern Medical College Association. The course covers four years of six months each. The total fees for the first three years are $105 each, and $130 for the fourth year. The Dean is Dr. William L. Dudley. Total enrolment for 1902-3 was 162; graduates, 34. The next session begins Oct. 1, 1903, and ends April 5, 1904.

UNIVERSITY OF TENNESSEE MEDICAL DEPARTMENT.—This was organized in 1876 as the Nashville Medical College; its present relations were assumed in 1879. The faculty is composed of 14 professors and 13 lecturers, assistants, etc., 27 in all. The school is a member of the Southern Medical College Association. The course of study includes work for four years of six months each. The total fees for each of the first three years are $90, and $65 for the fourth year. The Dean is Dr. Paul F. Eve, 614 Broad St. Total enrolment for 1902-3 was 150; graduates, 33. The next session begins Oct. 1, 1903, and ends April, 1904.

MEHARRY MEDICAL COLLEGE.—Colored. This school was organized in 1876 as the Medical Department of Central Tennessee College, now Walden University, "for the purpose of furnishing to the colored people of the South an opportunity of obtaining a medical education." The faculty is made up of 10 professors and 12 instructors, demonstrators, etc., 22 in all. The work embraces a four-year graded course, six months to the year. The total fees for the first three years are $40 each, and $50 for the fourth year. The Dean is Dr. G. W. Hubbard. Total registration for 1902-3 was 252; graduates, 41. The twenty-eighth session begins Sept. 2, 1903, and ends in March, 1904.

SOUTHWESTERN PRESBYTERIAN UNIVERSITY MEDICAL DEPARTMENT.—This department, just established, will begin its course this fall. Dr. J. W. Brandau is Dean. About 16 members of the faculty have been selected.

Knoxville.

TENNESSEE MEDICAL COLLEGE.—This school was organized in 1889, and has a faculty of 13 professors and 7 assistants, 20 in all. A new building with large and well-fitted laboratories, has been completed. City General Hospital and a free dispensary supply material for a study of clinical cases. This school is a member of the Southern Medical College Association. The curriculum includes graded work for four years of seven months each. Fees: Matriculation, $5; annual fee, $50; graduation fee, $25. The Secretary is Dr. Henry J. Kelso. Total number of students for 1902-3 was 62; graduates, 8. The fifteenth session begins Nov. 2, 1903, and closes May 23, 1904.

KNOXVILLE MEDICAL COLLEGE.—Colored. This school was established in 1900, following the discontinuance of the Medical Department of Knoxville College, organized in 1895. The teaching force comprises 13. The course covers four years of six

months each. Fees: First year, $42; second, $37; third, $30, and $40 for the fourth year. The Secretary is Dr. H. M. Green. Total number of students for 1902-3 was 23; graduates, 6. The next session opens Dec. 1, 1903, and closes in June, 1904.

Chattanooga.

CHATTANOOGA MEDICAL COLLEGE.—This is the Medical Department of Grant University, and was organized in 1889. The faculty consists of 10 professors and 18 instructors, demonstrators, etc., total 28. Adequate clinical facilities are afforded by the wards of Baroness Erlanger Hospital, a county asylum, an out-door clinic maintained in the college building and all material furnished by the city physician's office which the faculty desire to utilize. The scholastic requirements are those of the Association of Southern Medical Colleges, and involve a strictly graded course covering four years of seven months each. The total fees approximate $65 each session. The trustees have materially added to the general facilities of the institution by the recent erection of another fine four-story building of brick and stone for the medical department, wherein much modern and elaborate equipment has been installed. The Dean is Dr. E. A. Cobleigh. The total enrolment for the session of 1902-3 was 264, of which 41 graduated. The fifteenth annual term opens Oct. 7, 1903, and ends about May 15, 1904.

CHATTANOOGA NATIONAL MEDICAL COLLEGE.—Colored. This was organized in 1898, and claims a teaching force of 18. The course covers four years of seven months each. The total fees are $50 each year with an additional graduation fee of $20. Total enrolment for 1902-3 was 9; graduates, 1. The Dean is Dr. T. W. Haigler, 602 E. 8th St. The next session begins September, 1903, and ends March, 1904.

Memphis.

MEMPHIS HOSPITAL MEDICAL COLLEGE.—This school, organized in 1878, has a faculty of 10 professors and 18 assistants, beside quiz masters. Excellent clinical facilities are furnished by the City Hospital, Presbyterian Hospital, St. Joseph's Hospital and the East End Dispensary, the latter being located in the college building. The course includes graded work for four years of six months each. The total fees for the first three years are $75; for the fourth, $105. The Dean is Dr. W. B. Rogers. Total registration for 1902-3 was 675; graduates, 195. The twenty-fourth annual session will begin Nov. 1, 1903, and close April, 1904.

Jackson.

UNIVERSITY OF WEST TENNESSEE MEDICAL DEPARTMENT.—Colored. This school, organized in 1900, has a faculty of 10. The course is four years of seven months each. The fees are $40 per year, graduation $10 extra. Registration, 1902-3, 17; no graduates. The next session opens Sept. 3, 1903.

Sewanee.

MEDICAL DEPARTMENT OF THE UNIVERSITY OF THE SOUTH (Sewanee Medical College).—This school was organized in 1891 and has a faculty of 22. It is a member of the Southern Medical College Association. The course is four years of six months each. The fees are $65 for each of the first two years, $55 for the third and $75 for the last year. The Dean is Dr. John S. Cain. Total enrolment for 1902-3 was 203; graduates, 38. The twelfth session commenced May, 1903, and will close January, 1904.

TEXAS.

Texas, population 3,048,710, has six medical colleges. The University of Texas Department of Medicine is located at Galveston, a city of 37,789 inhabitants. Good board and room can be procured for from $15 to $20 a month.

The Medical Department of Fort Worth University is at Fort Worth, population 35,000. The cost of board and room in that city is from $12 to $15 a month.

The Baylor University College of Medicine, the Dallas Medical College, the Medical Department of Southwestern University and the Physio-Medical College of Texas are situated in Dallas, population 55,000.

Galveston.

UNIVERSITY OF TEXAS MEDICAL DEPARTMENT.—This department of the State University was organized in 1891 and has a faculty of 25. The John Sealy Hospital, also having an outdoor department, and St. Mary's Infirmary supply good material for clinical study. The requirements for admission are proof, either by certificate or examination, that the candidate is sufficiently proficient in English, including grammar, composition and rhetoric; mathematics through plane geometry and algebra including quadratics, and general history. The curriculum embraces graded work for four years of eight months each. Fees, to residents of the state: First year, $50; second and third each $20, and $5 for the fourth. Non-residents of the state are required to pay an additional fee of $50 each year. The President is Dr. William L. Prather. Total registration for 1902-3 was 179; graduates, 35. The next session begins Oct. 1, 1903, and ends in May, 1904.

Fort Worth.

MEDICAL DEPARTMENT OF FORT WORTH UNIVERSITY.—This school was organized in 1894, and has a faculty of 17 professors and 15 lecturers, assistants, etc., in all 32. Clinical facilities are supplied by St. Joseph's Hospital, with 200 beds; the Benevolent Home, containing 75 beds; the Delia Collins' Rescue Home, having 50 beds, and a college dispensary. The school is a member of the Southern Medical College Association. The course covers four years of six months each. The total fees for each of the first three years are $75, and $100 for the fourth year. The Dean is Dr. Bacon Saunders. The total enrolment for 1902-3 was 108; graduates, 5. The next session opens Oct. 1, 1903, and closes April 7, 1904.

Dallas.

BAYLOR UNIVERSITY COLLEGE OF MEDICINE.—This is a new name for the University of Dallas Medical Department, which was organized in 1901. In June, 1903, it became the Medical Department of Baylor University of Waco. The faculty numbers 19 professors and 21 assistants, total 40. Parkland Hospital, with 90 beds; St. Paul's Sanitarium, Good Samaritan, and Policlinic Infirmary and a college dispensary and hospital are utilized for clinical study. The course covers four years of six months each. The school is a member of the Association of Southern Medical Colleges. The fees are $75 for each of the four years, with a matriculation fee of $5, paid once, and a graduation fee of $25. The Dean is Dr. E. H. Cary. Total registration for 1902-3 was 66; graduates 3. The next session opens Oct. 1, 1903, and closes April 5, 1904.

SOUTHWESTERN UNIVERSITY MEDICAL COLLEGE.—This is the Medical Department of Southwestern University and was organized in June, 1903, with a faculty of 28 professors and 11 instructors, total 39. The first session opens Oct. 1, 1903. The course of instruction is graded and covers four years. Requirements for admission are equivalent to those prescribed by the Association of American Medical Colleges. The fees are: Matriculation, $5, paid once; annual tuition, $75; graduation, $25. The hospitals represented by the faculty and open for clinical teaching are: St. Paul's Sanitarium, City Hospital, Children's Home, Rescue Home, Woman's Home, St. Joseph's Orphanage, St. Matthew's Home for Children, Dr. H. K. Leake's Private Infirmary, Out-door Clinic of the Settlement Home and Presbyterian Home for Children. The Dean is Dr. John O. McReynolds.

DALLAS MEDICAL COLLEGE.—We have been unable to secure information of this school, aside from newspaper reports, the Dean and Secretary having failed to reply to several letters. The school was the Medical Department of Trinity University, but this relation has been severed. Total enrolment, 1902-3, 150 (estimated); graduates, 29. The course is four years of about six months each.

PHYSIO-MEDICAL COLLEGE OF TEXAS.—This college was organized in 1902. It has a faculty of 24 professors and 4 assistants, total 28. The course is four years of twenty-six weeks each. The fees are, first year, $70; fourth year, $85; other years, $65. Enrolment, 1902-3, 20; graduates, 3. The Secretary is Dr. R. L. Spann. The next session opens Oct. 13, 1903, and closes April 16, 1904.

VERMONT.

Vermont, population 343,641, has one medical school, located at Burlington, a town of about 20,000 people. Board and room costs from $3.50 to $5 a week.

Burlington.

MEDICAL DEPARTMENT UNIVERSITY OF VERMONT.—This school was organized in 1822, but suspended from 1836 until 1854, when it was reorganized. The faculty consists of 18 professors, and 27 assistants, instructors, etc., in all 45. The Mary Fletcher Hospital and a free dispensary furnish material for clinical instruction. Applicants for admission must be graduates of a four-year high school course or take an examination to show equivalent educational qualifications. The laboratory and lecture-room space and equipment are good. The course of study embraces graded work for four years of seven months each. The total fees for each of the first three years are $115 and $140 for the fourth year. The Secretary is Dr. B. J. Andrews. Total registration of students for 1902-3 was 246; graduates, 31. The fifty-first session begins Nov. 28, 1903, and ends June 25, 1904.

VIRGINIA.

Virginia, population 1,854,184, has three medical colleges, situated in Charlottesville (population 6,449) and Richmond (population 85,050). The clinical facilities in Richmond are good. Board and room can be obtained for $18 a month, and upward, in Charlottesville, and from $12 to $20 a month in Richmond.

Charlottesville.

UNIVERSITY OF VIRGINIA DEPARTMENT OF MEDICINE.—This school was organized in 1827, and has a faculty of 31. A free dispensary and the new four-story hospital furnish clinical facilities. The requirements for admission are those of the Association of American Medical Colleges. The course is four years of nine months each. Fees: First year, $110; second, $100; third, $80, and $60 for the fourth year. Total enrolment for 1902-3 was 151; graduates, 25. The eightieth session opens Sept. 15, 1903, and closes June 15, 1904.

Richmond.

MEDICAL COLLEGE OF VIRGINIA.—This school was organized in 1838 as the Medical Department of Hampden Sidney College, and in 1854 the present name was assumed. The faculty is made up of 16 professors and 24 lecturers, instructors, etc., a total of 40. Clinical material is furnished by the Memorial Hospital and the City Free Dispensary; an outside obstetric department also furnishes opportunities for clinical work. The magnificient new Memorial Hospital, opened July, 1903, is under the exclusive control of this college for clinical purposes. The State Penitentiary, City Almshouse and other public charities and asylums of the city also afford opportunities for clinical work. This school is a member of the Southern Medical College Association. The buildings are large and contain well-equipped laboratories and amphitheaters. The course embraces four years of seven months each. The fees are $85 for each year, with an additional graduation fee of $30. The Dean is Dr. Christopher Tompkins. Total registration for 1902-3 was 219; graduates, 35. The next session begins Sept. 29, 1903, and will end May 10, 1904.

UNIVERSITY COLLEGE OF MEDICINE.—This school was organized in 1893, and has a faculty of 19 professors, 34 lecturers, assistants, etc., a total of 53. Good clinical facilities are furnished by

Virginia Hospital, with a maternity department and annex, which was built especially for the purpose of affording bedside instruction; Richmond Eye, Ear and Throat Infirmary, containing 34 beds; the City Hospital, City Jail, State Penitentiary, and a college dispensary. Matriculation is in accord with the rules of the Association of American Medical Colleges, and of the Southern Medical College Association, to both of which this college belongs. The laboratory and lecture-room space and equipment are ample, and some of the instructors devote their entire time to the laboratories. The school lays especial importance on the careful instruction and guidance of each student. The curriculum covers four years of seven and one-half months each. The total fees are $85 for each year. The Dean is Dr. J. Allison Hodges, Richmond. Total enrolment for 1902-3 was 187; graduates, 44. The next session begins Sept. 29, 1903, and ends May 12, 1904.

WISCONSIN.

Wisconsin, population 2,069,042, has two medical colleges, the Milwaukee Medical College and Wisconsin College of Physicians and Surgeons. They are both situated in Milwaukee, a city of 300,000 people. Clinical facilities are furnished them in common by the County Hospital with 300 beds, and the Milwaukee Hospital for the Insane. Board and lodging can be had for from $3 to $5 a week.

Milwaukee.

MILWAUKEE MEDICAL COLLEGE.—This school was organized in 1893, and has a faculty of 33 professors and 26 lecturers, instructors, etc., a total of 59. Good clinical material is furnished by Trinity, St. Mary's, and the County hospitals, Milwaukee Hospital for the Insane, and a college dispensary. This school is a member of the Association of American Medical Colleges. Ample laboratory and amphitheater facilities are afforded. The course covers four years of seven months each. The total fees are $120 each for the first three years and $130 for the fourth year. The President is Dr. William H. Earles. Total number of students for 1902-3 was 184; graduates, 43. The tenth session begins Oct. 1, 1903, and will close about May 1, 1904.

WISCONSIN COLLEGE OF PHYSICIANS AND SURGEONS.—This college was organized in 1893, and has a faculty composed of 26 professors and 21 associates, assistants, etc., a total of 47. St. Joseph's Hospital, containing 150 beds; the college dispensary, the Milwaukee County Hospital, and the Hospital for the Insane supply facilities for clinical study. The school is a member of the Association of American Medical Colleges. The laboratories and lecture rooms are well equipped. The curriculum includes four years of eight months each. Fees: Matriculation, paid once, $5; general ticket, $100; for the use of the microscope, a fee of $2 is charged for each course. The Secretary is Dr. W. H. Washburn. Total enrolment for 1902-3 was 102; graduates, 23. The next session begins Sept. 29, 1903, and ends May 26, 1904.

CANADA.

The Dominion of Canada, with a population of 5,335,055 (1900) distributed through seven provinces and the Northwest territories, an area which reaches from the Atlantic to the Pacific, contains only 11 medical colleges. Of these, 4 are situated in Ontario, 4 in the province of Quebec, 2 in Nova Scotia, and one in Manitoba. The distinction between university and college in Canada is definite, namely, the latter is a teaching body only and has no right to grant a degree.

Toronto, Ontario.

UNIVERSITY OF TORONTO, MEDICAL FACULTY.—All the lectures and demonstrations are given in the laboratories and lecture rooms of the University; more than two-thirds of the instruction in the third and fourth years are given in the wards and in the pathologic and clinical laboratories. A fifth year is now required by the Ontario Medical Council. The faculty numbers 55. Clinical instruction is given in the Toronto General Hospital, Mercer Eye and Ear Infirmary, Burnside Lying-in Hospital, Hospital for Sick Children, and St. Michael's Hospital. Before commencing students must satisfy, as to qualifications, the College of Physicians and Surgeons of Ontario (Provincial Board). Fees are: Registration (payable once), $5; each of the first four years, $100; fifth year, $50; for the degree of M.B., and M.D., each $20. Number of students registered last session, 427; graduates, 90. The next session will commence Oct. 1, 1903. Trinity Medical College of Toronto, which has been in affiliation, has this year been amalgamated with the University. The matriculants of that school in 1902-3 were 165; graduates, 68.

ONTARIO MEDICAL COLLEGE FOR WOMEN.—This college is not empowered to grant degrees, but it qualifies students fully to take the examination in any university. The faculty numbers 35. The fee for each year is $100, exclusive of hospital and university fees. The number of undergraduates, 1902-3, was 31; graduates, 5. The twentieth session will open Oct. 1, 1903, and continue for eight months.

Kingston, Ontario.

QUEEN'S UNIVERSITY.—This school had 205 students registered in its medical department during 1902-3, and graduated 48. The faculty numbers 25.

London, Ontario.

MEDICAL DEPARTMENT OF WESTERN UNIVERSITY.—This school matriculates students in accordance with the requirements of the Provincial Council and has a course of five years. Victoria Hospital supplies the clinical advantages. The fees are about $90 per year and $25 extra for graduation. This school has nearly a hundred students and from 10 to 20 graduates annually. The next session runs from September to May.

Montreal, Quebec.

UNIVERSITY OF BISHOP'S COLLEGE, FACULTY OF MEDICINE.—The course leading to the degree of C.M., M.D., extends over four years of nine months each. The annual fees are $100, which include all practical classes and material for the same. Students must, on entering the study of medicine, pass the college matriculation examination, or, if the license for the Province of Quebec is desired, that of the College of Physicians and Surgeons of that Province. Special facilities are offered for the practical teaching of obstetrics, and undergraduates are obliged to take entire charge of several accouchements before being allowed to take the final examination. Other clinical facilities are offered in the Montreal General Hospital, the Royal Victoria Hospital, the Western Hospital, the Hotel Dieu, and the Woman's Hospital. During the last session the students numbered 70; graduates, 5. The next session will open Sept. 15, 1903.

MCGILL UNIVERSITY, FACULTY OF MEDICINE.—This college has a course of four years of nine months each. The faculty numbers 20 professors and 61 assistants, total 81. The total fees for the course are $500. Clinical instruction is given in the Montreal General Hospital, Royal Victoria Hospital, and Montreal Maternity Hospital. Students, except university graduates in arts, must pass the medical matriculation of this university or that of one of the provincial medical boards. Students registered during session 1902-3, 435; graduates in June, 1903, 100. The seventy-second session will commence Sept. 22, 1903.

ECOLE DE MEDECINE ET DE CHIRURGIE DE MONTREAL.—This is the Montreal branch of Laval University's medical faculty in Quebec. It is a French school, organized in 1845. The faculty numbers 47. The registration, 1902-3, was 229; graduates, 45.

Quebec, P. Q.

UNIVERSITE LAVAL, FACULTE DE MEDECINE.—This is the Quebec branch of Laval University medical faculty. The course consists of four years. The fees for the entire course are from $200 to $300, according to preliminary qualifications. The matriculants are about 100 annually, and the graduates about 20.

Halifax, Nova Scotia.

FACULTY OF MEDICINE OF DALHOUSIE UNIVERSITY.—The course consists of four years of eight months each, and leads to the final M.D. and C.M. examination. Prospective students must pass the preliminary examination of the Provincial Medical Board, a university examination or a recognized equivalent. During last session there were 80 students, of whom 20 graduated. The faculty numbers 23, and the next session is from September to April.

HALIFAX MEDICAL COLLEGE.—The course is four years of eight months each. Matriculants have to be examined by the Provincial Council, as the college does not conduct entrance examinations. The faculty numbers 30. Fees are about $300 for the whole course and $30 for graduation. The students, 1902-3, numbered 77; graduates, 19. The next session begins Sept. 1, 1903, and ends April 26, 1904.

Winnipeg, Manitoba.

MANITOBA MEDICAL COLLEGE.—This is in affiliation with the University of Manitoba, and has a faculty of 21. Winnipeg General Hospital and St. Boniface Hospital supply clinical material. The fees are $400 for the course of four years. There were 94 students in 1902-3, and 17 graduates.

THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES.

The requirements for admission to be maintained by colleges belonging to this Association are as follows:

SECTION 1.—Each college holding membership in this Association shall require of each student, before admission to its course of study, an examination, the minimum of which shall be as follows:

1. In English, a composition on some subject of general interest. This composition must be written by the student at the time of the examination, and should contain at least 200 words. It should be criticised in relation to thought, construction, punctuation, spelling, and handwriting.

2. In Arithmetic, such questions as will show a thorough knowledge of common and decimal fractions, compound numbers, and ratio and proportion.

3. In Algebra, such questions as will bring out the student's knowledge of the fundamental operations, factoring, and simple quadratic equations.

4. In Physics, such questions as will discover the student's understanding of the elements of mechanics, hydrostatics, hydraulics, optics, and acoustics.

5. In Latin, an examination on such elementary work as the student may offer, showing a familiarity usually attained by one year of study; for example, the reading of the first 15 chapters of Cæsar's Commentaries, and the translation into Latin of easy English sentences involving the same vocabulary.

SEC. 2.—In place of this examination, or any part of it, colleges, members of this Association, are at liberty to recognize the official certificates of reputable literary and scientific colleges, academies, high schools, and normal schools, and also

the medical student's certificate issued by any state examining board covering the work of the foregoing entrance examination.

SEC. 3.—Colleges, members of this Association, may allow students who fail in one or more branches in this entrance examination the privilege of entering the first-year course, but such students shall not be allowed to begin the second course until the entrance requirements are satisfied.

SEC. 4.—Colleges, members of this Association, are free to honor official credentials issued by medical colleges of equal requirements, except in the branches of study embraced in the last year of their own curriculum.

SEC. 5.—Candidates for the degree of Doctor of Medicine in the year 1899 and thereafter shall have attended at least four courses of medical instruction, each course of at least six months' duration, no two courses of which shall have been in the same calendar year.

SEC. 6.—Colleges, members of this Association, are free to give to students who have met the entrance requirements of the Association additional credit for time on the four years' course as follows: (a) To students having the A.B., B.S., or equivalent degree from reputable literary colleges, one year of time; (b) To graduates and students of colleges, of homeopathic or eclectic medicine, as many years as they attended those colleges, provided they have met the previous requirements of the Association and that they pass an examination in materia medica and therapeutics; (c) To graduates of reputable colleges of mentistry, pharmacy, and veterinary medicine, one year of time.

SEC. 7.—A college not giving the whole four courses of the medical curriculum, and not graduating students, but otherwise eligible, may be admitted to membership.

At the last meeting of this Association new regulations were adopted. After July 1, 1905, matriculants must have a diploma from a four-year high school or an equivalent education. Full particulars were given in THE JOURNAL, July 25, page 274.

The following colleges are members: Arkansas University Med. Dept., University of Southern California College of Medicine, University of California Med. Dept., University of Colorado Medical School, Denver and Gross College of Medicine, Yale University Med. Dept., Columbian University Med. Dept., Georgetown University Med. Dept., Howard University Med. Dept., National University Med. Dept. of Washington, D. C., American Medical Missionary College, University of Illinois Med. Dept., Illinois Medical College, Northwestern University Medical School, Rush Medical College, Fort Wayne College of Medicine, Central College of Physicians and Surgeons, Medical College of Indiana, Iowa College of Physicians and Surgeons, University of Iowa College of Medicine, Keokuk Medical College, Sioux City College of Medicine, Kansas Medical College, University of Kansas Med. Dept., Hospital College of Medicine, Kentucky School of Medicine, University of Louisville Med. Dept., Kentucky University Med. Dept., Flint Medical College, Baltimore Medical College, Baltimore University School of Medicine, Baltimore College of Physicians and Surgeons, Johns Hopkins University Medical School, University of Maryland School of Medicine, Woman's Medical College of Baltimore, Boston College of Physicians and Surgeons, University of Michigan Department of Medicine and Surgery, Detroit College of Medicine, Michigan College of Medicine and Surgery, Hamline University College of Medicine, University of Minnesota College of Medicine, University of Missouri Med. Dept., Kansas City Medical College, University Medical College of Kansas City, Barnes Medical College, Marion Sims-Beaumont Medical College, St. Louis College of Physicians and Surgeons, John A. Creighton Medical School, Omaha Medical College, University of Nebraska College of Medicine, University of Buffalo Med. Dept., College of Medicine Syracuse University, University of North Carolina Med. Dept., Medical College of Ohio, Miami Medical College, Western Reserve University Medical College, Cleveland College of Physicians and Surgeons, Ohio Medical University, Starling Medical College, Toledo Medical College, University of Oregon Med. Dept., Med. Dept. Willamette University, Jefferson Medical College, Medico-Chirurgical College, Woman's Medical College of Pennsylvania, Western Pennsylvania Medical School, University of Virginia College of Medicine, Milwaukee Medical College, and Wisconsin College of Physicians and Surgeons.

Further information may be had of the secretary, Dr. F. C. Zapffe, 1764 Lexington street, Chicago.

THE SOUTHERN MEDICAL COLLEGE ASSOCIATION.

The following extracts from the Constitution show a portion of the regulations controlling matriculants:

ART. IV. SEC. 3. He must possess a diploma of graduation from some literary or scientific institution of learning, or a certificate from some legally constituted high school, general superintendent of state education, or superintendent of some county board of public education, attesting that he has been regularly examined and is possessed of at least the educational attainments required of first grade teachers of public schools or a certificate that he has passed the entrance examination to a university; and a student may be given one month, from the date of his admission, to submit his certificate of qualification.

A candidate for graduation (among other provisions), "must have attended, in a regular and reputable medical college, four full courses of lectures, of not less than six months (26 weeks) each, in four separate years, which is construed to mean that no two courses shall either commence or close in the same calendar year—that is, between January 1 and the ensuing December 31." (Art. VI, Sec. 2.)

The following colleges are members: Medical College of Alabama, Birmingham Medical College, Tulane University Med. Dept., University of Mississippi Med. Dept., University of Tennessee Med. Dept., University of Nashville Med. Dept., University of the South Med. Dept., Vanderbilt University Med. Dept., Tennessee Medical College, Baylor University Med. Dept, Fort Worth University Med. Dept., Medical College of Virginia, University College of Medicine.

The secretary is Dr. G. C. Savage, Nashville, Tenn.

AMERICAN INSTITUTE OF HOMEOPATHY.

The minimum requirements for entrance into the freshman class of all homeopathic medical colleges, as adopted in 1901, are, with abbreviation, as follows:

1. English Composition. Exercise on assigned theme, not less than 200 words. Exercise in reading. Exercise in correction of ungrammatical sentences.

2. Mathematics. Arithmetical exercises in (a) vulgar fractions; (b) decimals; (c) percentage; (d) proportion; (e) square and cube root; (f) weights and measures; (g) decimal system. Mensuration. (a) Definition of terms: (b) exercises under the more fundamental rules.

3. Geography (general facts about North America).

4. History. General, with particular reference to human progress in art, science and letters. (The examination to avoid exact dates and minor details.)

5. Latin Language. (a) Grammar; (b) four books of Cæsar, or its equivalent.

The colleges recognized as in good standing by this organization are: Hahnemann Medical College of the Pacific; Denver Homeopathic Medical College; Hahnemann Medical College, Chicago; Chicago Homeopathic Medical College; Hering Medical College; Homeopathic Medical Department of the State University of Iowa; Southwestern Homeopathic College; Kansas City Hahnemann Medical College; Southern Homeopathic Medical College; Boston University School of Medicine; Homeopathic Medical College of University of Michigan; College of Homeopathic Medicine and Surgery of University of Minnesota; Homeopathic Medical College of Missouri; New York Homeopathic Medical College; New York Medical College; Cleveland Homeopathic Medical College; Pulte Medical College; Hahnemann Medical College of Philadelphia.

The secretary is Dr. Chas. Gatchell, 100 State st., Chicago.

THE NATIONAL CONFEDERATION OF ECLECTIC MEDICAL COLLEGES.

The following are the minimum requirements of this confederation, for admission to the freshman year:

2. Good English education, to be attested by (a) first grade teacher's certificate; (b) a diploma from a graded high school or literary or scientific college or university; (c) regent's medical student's certificates; (d) entrance examination.

3. An elementary knowledge of natural history, physics and Latin.

The following colleges are members of this confederation: Eclectic Medical Institute, Cincinnati; American Medical College, St. Louis; Eclectic Medical College, New York; Bennett College of Eclectic Medicine and Surgery; California Medical College; Georgia College of Eclectic Medicine and Surgery; Lincoln Medical College.

The secretary is Dr. John K. Scudder, 1009 Plum st., Cincinnati.

COLLEGE NOTES.

Miscellaneous Items of Interest About Many Colleges.

Oklahoma School Not Yet in Operation.—We announced last year the formation of a new medical college in Oklahoma City. The secretary informs us that the school is not yet in operation.

Medical Department University of Mississippi.—This school is to be opened this fall, but for the present only the first two years' work will be undertaken. The dean is Dr. W. S. Leathers, Oxford.

The Table of Homes of Students.—This table on pages 454 to 457 does not give the statistics of every college, as some colleges failed to furnish, or were unable to indicate, the states from which their students came.

Michigan College of Medicine and Surgery.—This school has established a department of tropical medicine, the lecturers for the coming year being Drs. R. S. Linn and V. J. Hooper, both of whom served as volunteer surgeons in the late war.

Canadian Students in the United States.—In the table indicating homes of students, pages 454 to 457, those marked foreign include Canadians. This will explain the number in the "foreign" column, in certain colleges located near the border.

Southwestern University Medical Department.—The curators and trustees of the Southwestern University of Georgetown, Texas, have accepted the offer made by the Texas College of Physicians and Surgeons of Dallas, to make it the medical department of the University.

States That Have No Medical Schools.—The following states and territories contain no medical colleges: Arizona, Delaware, Florida, Idaho, Indian Territory, Montana, New Jersey, New Mexico, Nevada, North Dakota, Rhode Island, South Dakota, Utah, Washington, West Virginia and Wyoming.

Hospital College Improvements.—The faculty of the Hospital College of Medicine has renewed the contract with Central University of Kentucky for ten years, continuing as the medical department of the university. The university owns the college buildings, which it is said will be altered for the 1904 session.

Teaching Methods.—This is the title of a little publication published by the University College of Medicine, Richmond, Va., a year ago. It has been the subject of a great deal of favorable comment. It indicates the hold modern educational ideas are obtaining in the colleges of medicine. Medical teachers may be glad to read this booklet.

Medical Department Arkansas University.—A committee has been appointed to devise ways and means to erect a new "Folsom Clinic." It is expected to cost not less than $20,000. Dr. H. C. Stinson, superintendent of the State Asylum for the Insane, will hereafter lecture on nervous diseases, in place of Dr. Illing. Dr. J. W. Jenkins has been elected adjunct professor of surgery.

Medical College of Virginia.—This school has a fine new hospital. The patients from the Old Dominion Hospital, formerly used by the college, have been removed to the new Memorial Hospital, and the former building is being converted into laboratories to meet the demand for more room caused by the increase in students. Dr. J. Shelton Horsley, formerly of El Paso, Texas, has accepted the chair of the principles of surgery in this college.

Kentucky University, Continuous Session.—The Medical Department of Kentucky University, beginning October 1, will inaugurate a continuous session, divided into four quarters of thirteen weeks each. The course requires four years, with an attendance of at least two quarters in each year, a student beginning his studies with any quarter. At least forty-two months must elapse between the date of his first matriculation and the date of graduation.

The University of Kansas School of Medicine.—This school is remodeling and refitting the old laboratories and will add several new ones in Snow Hall, from which the natural history collections are being removed for installation in the new Museum Building. By this arrangement they will have some fine rooms for microscopic work. To fill the position of associate professor of anatomy, Dr. G. H. Hoxie, A.M. (Union College), M.D. Zurich, takes the place of Dr. S. W. Williston, who has gone to the University of Chicago.

University College of Medicine.—Arrangements are about perfected whereby the University College of Medicine, Richmond, Va., will obtain the entire ownership of a hospital containing 140 beds. This hospital, which is provided with a large number of private rooms beside the wards, has a spacious surgical amphitheater in addition to the private operating room. It is well equipped with all the accessories of a modern hospital including a free ambulance service. Its *x*-ray apparatus is called one of the best in the south.

Is the Woman's College Passing?—Among the colleges that have ceased operation in the past two years are the Northwestern University Woman's Medical College, Chicago, and Laura Memorial Woman's Medical College, Cincinnati. The undergraduates of these institutions continued their work in most instances in coeducational schools. There now remain only the Woman's Medical College of Baltimore; the Woman's Medical College of Kansas City, and the Woman's Medical College of Pennsylvania. The question arises: Is the woman's college suffering in competition with the coeducational school?

University of Michigan Department of Medicine and Surgery.—The psychopathic ward now being erected in connection with the hospital of the University of Michigan will be opened early in the fall. This ward will contain forty typical cases of insanity, and these will be used for the double purpose of scientifically studying forms of insanity and for the instruction of students. This department of the University Hospital will be in touch with the insane asylums of the state, and from the latter typical cases of insanity will be sent to the hospital.

New Colleges and Colleges Discontinued.—The following new colleges are mentioned this year: Southwestern Presbyterian University Medical Department, Nashville, Tenn.; University of West Tennessee Medical Department, Jackson; Southwestern University Medical Department, Dallas, Tex. In addition there are two new schools that give only the first two years of the course: Wake Forest (N. C.) School of Medicine and University of Mississippi Medical Department, Oxford. The following colleges have passed out of existence: Dunham Medical College has been consolidated with Hering Medical College, Chicago; Saginaw Valley Medical College has been consolidated with the Michigan College of Medicine and Surgery, Detroit; Laura Memorial Woman's Medical College has ceased to exist, being partially absorbed by the Miami Medical College; the Medical Department of the State University at Louisville, Ky. (colored), has been absorbed by the Louisville National Medical College. In addition, plans are being discussed for the consolidation of the Medical College of Indiana and Central College of Physicians and Surgeons, both of Indianapolis.

Name of College.	Estimated population of city in which college is located.	No. of students registered, session 1902-3.	Graduates, 1903.	Total number of teachers.	Number of weeks in college year.	Total graduates all colleges in state, 1903.	Total students in all colleges in state, 1902-3.
ALABAMA						34	239
Birmingham Medical College.—R.	38,000	94	22	32	24		
Medical College of Alabama.—R.	"	145	12	18	24		
ARKANSAS						12	236
Medical Department Arkansas University.—R.	60,000	236	12	36	24		
CALIFORNIA						145	683
Cooper Medical College.—R.	400,000	212	45	40	32		
Medical Department University of California.—R.	"	115	26	70	36		
California Medical College.—E.	"	60	7	28	32		
Hahnemann Medical College of the Pacific.—H.	"	38	12	42	28		
College of Physicians and Surgeons, San Francisco.—R.	"	146	28	46	36		
Oakland College of Medicine and Surgery.—R.	67,000	6	....	21	32		
College of Medicine, University of Southern California.—R.	102,479	106	27	34	32		
COLORADO						47	222
Denver and Gross College of Medicine.—R.	175,000	130	33	83	32		
Denver Homeopathic College.—H.	"	29	6	32	28		
Colorado School of Medicine.—R.	6,150	63	8	27	36		
CONNECTICUT						27	145
Yale University, Medical Department.—R.	115,000	145	27	52	32		
DISTRICT OF COLUMBIA						94	582
Columbian University, Department of Medicine.—R.	278,718	260	34	56	32		
Georgetown University School of Medicine.—R.	"	144	22	53	32		
Howard University, Medical Department.—R.	"	141	29	35	28		
National University, Medical Department.—R.	"	37	9	37	32		
GEORGIA						43	356
Atlanta College of Physicians and Surgeons.—R.	89,872	200	34	28	24		
Georgia College of Eclectic Medicine and Surgery.—E.	"	46	2	12	24		
Medical College of Georgia.—R.	39,441	110	7	24	24		
ILLINOIS						850	4,055
American Medical Missionary College.—R.	1,900,000	88	22	25	36		
Bennett College of Eclectic Medicine and Surgery.—E.	"	113	18	37	26		
Chicago Homeopathic Medical College.—H.	"	130	37	63	30		
College of Medicine and Surgery.—Ph.M.	"	76	12	44	28		
College of Physicians and Surgeons, Chicago.—R.	"	685	216	133	32		
Hahnemann Medical College and Hospital.—H.	"	195	69	60	28		
Harvey Medical College.—R.	"	330	20	63	40		
Hering Medical College.—H.	"	90	22	44	28		
Illinois Medical College.—R.	"	265	47	45	24		
Jenner Medical College.—R.	"	107	13	53	44		
Northwestern University Medical School.—R.	"	608	127	108	36		
Rush Medical College.—R.	"	1,047	220	166	36		
National Medical University	"	173	17	76	36		
American College of Medicine and Surgery.—E.	"	126	10	65	32		
INDIANA						117	550
Central College of Physicians and Surgeons.—R.	169,164	115	22	68	28		
Medical College of Indiana.—R.	"	332	76	68	28		
Physio-Medical College of Indiana.—Ph.M.	"	29	9	30	26		
Eclectic Medical College of Indiana.—E.	"	28	5	31	24		
Fort Wayne College of Medicine.—R.	45,115	46	5	34	28		
IOWA						126	667
Keokuk Medical College of Physicians and Surgeons.—R.	14,641	243	56	22	28		
Iowa College of Physicians and Surgeons.—R.	62,139	66	11	32	36		
Sioux City College of Medicine.—R.	33,111	72	13	15	32		
State University of Iowa, Homeopathic Medical Dept.—H.	7,987	35	11	20	36		
State University of Iowa, Medical Department.—R.	"	251	35	39	36		
KANSAS						22	184
College of Physicians and Surgeons of Kansas City.—R.	55,000	52	10	42	28		
Kansas Medical College.—R.	33,608	101	12	33	30		
School of Medicine, University of Kansas	10,862	31	....	18	....		
KENTUCKY						278	1,573
Hospital College of Medicine.—R.	225,000	421	69	44	24		
Kentucky School of Medicine.—R.	"	290	56	39	28		
Louisville Medical College.—R.	"	257	53	22	24		
Louisville National Medical College.—R.	"	26	4	19	28		
Southwestern Homeopathic Medical College.—H.	"	22	5	30	28		
Medical Department, University of Louisville.—R.	"	227	34	37	24		
Kentucky University, Medical Department.—R.	"	330	57	33	26		
LOUISIANA						87	447
Flint Medical College of New Orleans University	287,104	42	5	13	30		
Tulane University, Medical Department.—R.	"	405	82	41	28		
MAINE						20	100
Medical School of Maine, Bowdoin College.—R.	50,000	100	20	18	26		
MARYLAND						404	1,678
Baltimore Medical College.—R.	508,957	410	93	51	28		
Baltimore University School of Medicine.—R.	"	58	26	25	24		
College of Physicians and Surgeons of Baltimore.—R.	"	315	76	49	28		
Medical Department, Johns Hopkins University.—R.	"	257	49	74	34		
Southern Homeopathic Medical College.—H.	"	26	3	32	28		
University of Maryland, School of Medicine.—R.	"	392	96	55	30		
Woman's Medical College of Baltimore.—R.	"	16	2	27	32		
Maryland Medical College.—R.	"	204	59	33	32		
MASSACHUSETTS						204	1,025
Boston University School of Medicine.—H.	603,163	127	36	58	32		
College of Physicians and Surgeons.—R.	"	117	19	39	32		
Harvard University Medical School.—R.	"	432	114	138	36		
Tufts' College Medical School.—R.	"	349	35	74	32		
MICHIGAN						250	1,043
Detroit College of Medicine.—R.	300,000	257	62	71	28		
Detroit Homeopathic Medical College.—H.	"	52	14	35	28		
Michigan College of Medicine and Surgery.—R.	"	66	19	36	28		
Grand Rapids Medical College—R.	87,565	52	16	31	24		
Saginaw Valley Medical College.—R.	43,000	85	34	30	28		
University of Michigan Dept. of Medicine and Surgery.—R.	14,509	455	92	67	36		
University of Michigan Homeopathic Medical College.—H.	"	76	13	20	36		
MINNESOTA						110	456
College of Homeopthic Med. and Surg., Univ. of Minn.—H.	225,000	18	6	33	34		
College of Medicine and Surgery, Univ. of Minnesota.—R.	"	315	70	84	36		
Medical Department of Hamline University.—R.	"	123	34	40	36		
MISSOURI						522	2,476
Medico-Chirurgical College.—R.	163,752	83	19	61	24		
Woman's Medical College.—R.	"	16	1	50	28		

Name of College.	Estimated population of city in which college is located.	No. of students registered, session 1902-3.	Graduates, 1903.	Total number of teachers.	Number of weeks in college year.	Total graduates all colleges in state, 1903.	Total students in all colleges in state, 1902-3.
MISSOURI.—*Continued*							
University Medical College of Kansas City.—R.	163,752	222	63	46	28		
Kansas City Hahnemann Medical College.—H.	"	71	17	38	28		
Kansas City Medical College.—R.	"	122	24	45	28		
Eclectic Medical University.—E.	"	61	15	22	24		
Central Medical College.—R.	105,000	80	23	24	28		
Ensworth Medical College.—R.	"	110	14	34	28		
Barnes' Medical College.—R.	575,238	495	100	44	28		
Marion-Sims-Beaumont College of Medicine.—R.	"	391	88	95	28		
St. Louis College of Physicians and Surgeons.—R.	"	270	62	49	28		
American Medical College.—E.	"	78	18	14	28		
Homeopathic Medical College of Missouri.—H.	"	66	13	31	28		
Medical Department, Washington University.—R.	"	281	53	61	30		
University of the State of Missouri.—R.	5,651	98	12	32	36		
NEBRASKA						83	366
University of Nebraska College of Medicine.	102,555	138	38	55	32		
John A. Creighton Medical College.—R.	"	142	29	43	30		
Lincoln Medical College of Cotner University.—E.	40,169	86	16	27	32		
NEW HAMPPSHIRE						14	65
Dartmouth Medical College.—R.	1,884	65	14	23	32		
NEW YORK						498	2,581
Albany Medical College.—R.	100,000	165	33	64	30		
College of Physicians and Surgeeons.—R.	3,437,202	795	168	114	32		
Cornell University Medical College.—R.	"	394	60	142	30		
Eclectic Medical College.—E.	"	104	13	30	28		
Long Island College Hospital.—R.	"	290	40	73	30		
New York Homeopathic Medical College and Hospital.—H.	"	111	29	62	28		
New York Medical College and Hospital for Women.—H.	"	34	8	44	26		
University and Bellevue Hospital Medical College.—R.	"	311	73	107	32		
Syracuse University College of Medicine.—R.	108,374	140	29	50	32		
University of Buffalo, Medical Department.—R.	352,387	237	45	79	28		
NORTH CAROLINA						37	273
Leonard Medical School.—R.	13,643	113	23	11	24		
Wake Forest School of Medicine.	823	10	....	5	....		
North Carolina Medical College.—R.	904	67	10	19	32		
Medical Department, University of North Carolina.	13,643	83	4	25	28		
OHIO						365	1,188
Western Reserve University Medical College.—R.	381,768	97	26	51	32		
Cleveland College of Physicians and Surgeons.—R.	"	86	22	63	32		
Cleveland Homeopathic Medical College.—H.	"	115	40	56	30		
Eclectic Medical Institute.—E.	325,902	146	45	29	30		
Laura Memorial Woman's Medical College.—R.	"	20	7	....	....		
Medical College of Ohio.—R.	"	170	54	50	32		
Pulte Medical College.—H.	"	30	10	32	28		
Miami Medical College.—R.	"	106	40	47	32		
Ohio Medical University.—R.	125,560	214	58	34	32		
Starling Medical College.—R.	"	163	49	36	32		
Toledo Medical College.—R.	131,822	41	14	38	32		
OREGON						17	128
University of Oregon Medical Department.—R.	100,000	88	10	27	28		
Medical Department, Willamette University.—R.	4,258	40	7	16	24		
PENNSYLVANIA						548	2,456
Temple College of Philadelphia, Dept. of Medicine.	1,293,697	70	....	37	36		
University of Pennsylvania Department of Medicine.—R.	"	469	111	103	36		
Hahnemann Medical College and Hospital.—H.	"	233	69	56	32		
Jefferson Medical College.—R.	"	771	166	102	32		
Woman's Medical College of Pennsylvania.—R.	"	165	30	53	32		
Medico-Chirurgical College of Philadelphia.—R.	"	431	93	77	32		
Western Pennsylvania Medical College.—R.	321,616	317	79	70	32		
SOUTH CAROLINA						21	95
Medical College of the State of South Carolina.—R.	55,807	95	21	21	24		
TENNESSEE						447	2,134
Tennessee Medical College.—R.	32,637	62	8	20	28		
Knoxville Medical College.—R.	"	23	6	13	24		
Medical Department of University of Nashville.—R.	80,865	317	50	27	26		
Vanderbilt University Medical Department.—R.	"	162	34	35	24		
University of Tennessee, Medical Department.—R.	"	150	33	27	24		
Meharry Medical College.—R.	"	252	41	22	24		
Memphis Hospital Medical College.—R.	102,320	675	195	28	24		
Sewanee Medical College.—R.	1,200	203	38	22	24		
Chattanooga National Medical College.—R.	30,154	9	1	18	28		
Chattanooga Medical College.—R.	"	264	41	28	28		
University of West Tennessee, Medical Department.	15,000	17	....	10	28		
TEXAS						75	523
Medical Department Fort Worth University.—R.	35,000	108	5	32	24		
University of Texas Department of Medicine.—R.	37,789	179	35	25	32		
Baylor University College of Medicine.	55,000	66	3	40	24		
Physio-Medical College of Texas.	"	20	3	28	26		
Dallas Medical College.—R.	"	150	29	40	24		
VERMONT						31	246
University of Vermont Medical Department.—R.	20,000	246	31	45	28		
VIRGINIA						104	557
Medical College of Virginia.—R.	85,050	219	35	38	28		
University College of Medicine.—R.	"	187	44	53	30		
University of Virginia Department of Medicine.—R.	6,449	151	25	31	36		
WISCONSIN						66	286
Milwaukee Medical College.—R.	300,000	184	43	59	28		
Wisconsin College of Physicians and Surgeons.—R.	"	102	23	47	32		

The Family Physician to the Medical Attendant at the Health Resort.—A writer in the *Corr.-Blatt f. Schweizer Aerzte* calls attention to an antiquarian catalogue, which lists a number of letters written 1865 to 1888 by prominent Swiss physicians commending certain patients to the care of a physician at a watering place, and posting in regard to the details of each case. Another bunch of similar letters written by a physician at Zurich, still in active practice and addressed to a resort physician, are offered for sale at 37c. each. These facts warrant great care on the part of physicians in the matter of such correspondence, and impose greater prudence on the resort physicians not to allow such letters to be exploited for gain. The article concludes with an appeal to resort physicians to reply to these carefully-written letters, a courtesy and necessity which is too often neglected. The family physician is anxious to know the measures attempted and the results, and will be grateful for any aids in the diagnosis if communicated in writing. Any such communications given orally to the patients are liable to be misunderstood and defectively transmitted.

NAME OF COLLEGE.*	Alabama.—524	Arizona.—4	Arkansas.—561	California.—612	Colorado.—195	Connecticut.—290	Delaware.—60	D. of Colum.—139	Florida.—115	Georgia.—463	Idaho.—28	Illinois.—2619	Indian Ter.—103	Indiana.—1111	Iowa.—1095	Kansas.—612	Kentucky.—1016	Louisiana.—470	Maine.—231	Maryland.—465	Massach'ts.—1171
Birmingham Medical College	92	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Medical College of Alabama	135	...	...	...	...	...	...	...	3	...	...	...	...	...	1	...	...	...	...	...	...
Medical Department Arkansas University	...	...	213	...	...	...	...	...	...	...	...	...	7	...	...	...	...	6	...	...	...
Coll. of Physicians and Surgs., San Francisco	...	...	...	60	...	1	...	...	...	...	...	8	...	5	5	3	2	1	...	...	...
Cooper Medical College	...	...	...	186	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
California Medical College	...	2	...	40	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Coll. of Med., University of So. California	...	...	...	81	2	...	...	...	...	...	...	6	...	...	3	...	...	...	...	...	...
Oakland College of Medicine and Surgery	...	...	...	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hahnemann Medical College of the Pacific	...	...	...	34	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
University of California Med. Department	...	...	...	107	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Denver Homeopathic College	...	...	...	...	15	...	...	...	...	...	...	...	...	2	...	1	...	...	...	...	2
Colorado School of Medicine	...	...	...	...	37	...	...	...	...	...	...	1	...	2	5	...	1	...	3	...	...
Denver and Gross College of Medicine	1	...	1	1	74	1	...	...	...	...	1	5	...	2	4	2	3	1	...	...	2
Yale University Medical Department	...	...	...	...	...	100	1	...	...	...	...	...	...	...	...	2	...	...	...	...	14
Howard University Medical Department	2	...	1	...	...	...	...	35	4	9	...	2	...	3	1	4	3	1	...	3	1
Medical Department Columbian University	...	...	1	1	...	2	...	38	...	4	1	10	...	7	1	1	3	3	5	30	5
University of Georgetown Med. Department	1	...	...	...	1	3	1	42	1	...	...	3	...	...	...	1	1	1	...	8	27
Atlanta College of Physicians and Surgeons	17	...	...	...	...	1	...	...	11	153	...	...	1	...	...	...	1	...	...	...	...
Medical College of Georgia	1	...	...	...	...	...	...	...	...	94	...	...	...	...	...	...	...	...	...	...	...
Georgia Coll. of Eclectic Med. and Surg.	3	...	4	...	...	...	...	...	1	35	...	...	1	...	...	...	...	...	...	...	...
American Medical Missionary College	...	...	...	5	1	...	...	...	1	...	...	4	...	1	13	2	...	...	1	...	1
Bennett Coll. of Eclectic Med. and Surg	...	...	...	1	...	...	...	...	...	...	...	67	...	7	5	...	...	...	...	...	...
Chicago Homeopathic Medical College	...	...	...	1	...	...	...	...	...	...	...	57	...	12	16	5	1	...	1	...	...
College of Medicine and Surgery	1	...	...	2	2	1	...	...	...	...	1	30	...	4	2	...	1	...	...	...	1
Harvey Medical College	...	...	...	...	...	...	...	...	...	...	...	330	...	...	...	...	...	...	...	...	...
Coll. of Phys. and Surgs. of Chicago	...	...	3	3	1	1	...	1	1	...	...	379	...	25	81	15	1	1	...	...	1
Jenner Medical College	...	...	...	1	2	...	...	...	...	...	...	82	...	1	2	...	1	...	...	1	...
Hahnemann Medical College and Hospital	...	...	...	2	...	1	3	...	...	...	1	80	...	5	32	5	1	...	...	...	2
Hering Medical College	...	...	...	1	2	...	...	...	...	...	...	58	1	3	2	4	...	...	...	...	...
Illinois Medical College	1	...	...	2	2	...	...	...	...	1	6	67	...	52	4	7	3	3	...	...	1
Northwestern University Medical School	...	...	...	5	2	...	...	...	...	...	1	251	2	22	107	14	...	1	...	1	...
Rush Medical College	...	...	6	12	10	...	...	...	...	1	1	382	1	81	92	30	9	1	1	1	8
National Medical University	...	...	1	2	1	1	...	...	...	1	...	99	2	3	10	5	2	...	...	1	...
American College of Medicine and Surgery	3	...	2	2	2	2	...	...	...	4	...	34	1	21	2	1	2	1	2	1	1
Central Coll. of Phys. and Surgs. of Indiana	...	...	...	...	...	...	...	...	...	...	...	4	...	97	3	...	1	...	...	...	...
Eclectic Medical College of Indiana	...	...	...	1	...	...	...	...	...	...	...	...	...	26	...	...	...	...	...	...	...
Medical College of Indiana	2	...	1	...	1	...	...	...	...	...	...	15	...	300	1	...	...	...	...	...	...
Physio-Medical College of Indiana	...	...	...	...	...	...	...	...	...	...	...	3	...	16	...	...	...	...	...	...	...
Fort Wayne College of Medicine	...	...	...	...	...	...	...	...	...	...	...	...	...	35	...	...	...	...	...	...	...
Keokuk Med. Coll. of Phys. and Surgs	...	...	...	1	3	...	...	...	...	...	1	48	...	3	128	7	...	...	...	...	...
Iowa College of Physicians and Surgeons	...	...	...	...	...	...	...	...	...	...	...	1	...	...	61	...	...	...	...	...	...
Sioux City College of Medicine	...	...	...	...	...	...	...	...	...	...	...	2	...	1	49	...	...	...	...	...	...
State University of Iowa Homeo. Med. Dept.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	34	...	...	...	...	...	...
State University of Iowa Med. Dept	...	...	...	1	...	...	...	...	...	...	...	10	...	...	230	1	...	...	...	...	1
Coll. of Phys. and Surgs. of Kansas City	...	...	...	...	...	...	...	...	...	...	...	...	2	1	...	32	...	...	...	...	...
Kansas Medical College	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	93	...	...	...	...	1
School of Medicine of University of Kansas	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	31	...	...	...	...	...
Hospital College of Medicine	2	...	5	...	...	...	...	...	3	...	...	7	2	35	...	6	291	3	...	...	...
Louisville Medical College	14	...	6	...	...	...	...	...	1	7	...	3	3	33	...	6	71	8	...	...	...
Louisville National Medical College	...	...	...	...	...	...	...	...	...	...	...	1	...	4	...	...	17	...	...	...	...
Kentucky School of Medicine	2	...	4	...	1	1	...	...	2	2	1	7	3	61	...	1	92	...	1	1	2
S. W. Homeopathic Medical College	...	...	...	...	...	...	...	...	...	...	...	1	...	8	...	...	11	...	...	...	...
Medical Department University of Louisville	...	...	2	1	1	...	...	...	...	1	...	7	...	38	1	...	116	2	...	...	...
Kentucky University Medical Department	6	...	5	1	...	...	...	...	2	5	...	5	3	43	1	5	155	6	1	...	2
Flint Med. College of New Orleans Univ.	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	20	...	...	...
Tulane University Medical Department	28	1	17	...	1	...	...	...	11	2	...	...	...	1	...	...	1	211	...	1	...
Med. School of Maine at Bowdoin Coll.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	88	...	...
Baltimore Medical College	1	...	...	...	...	14	1	1	1	4	...	3	...	3	...	...	...	...	13	76	63
Baltimore University School of Medicine	...	...	...	...	...	2	1	...	...	...	...	...	...	...	...	...	1	...	1	12	6
Coll. of Phys. and Surgs., Baltimore	3	...	...	1	1	16	4	...	1	4	...	...	...	2	...	...	1	...	6	46	26
Med. Dept. Johns Hopkins University	7	...	...	9	2	10	...	3	3	7	...	11	...	4	8	2	7	...	13	42	11
Southern Homeopathic Medical College	...	...	...	...	...	...	4	1	...	...	...	...	...	...	...	...	...	...	...	12	...
University of Maryland School of Medicine	...	...	1	...	...	...	4	1	7	15	...	...	...	...	...	...	2	...	2	155	9
Woman's Medical College of Baltimore	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	9	...
Maryland Medical College	3	...	1	1	...	3	4	...	4	8	...	...	1	...	1	...	1	4	7	36	9
Boston University School of Medicine	1	...	...	1	...	3	...	...	1	...	...	...	...	...	...	...	...	...	6	...	84
College of Physicians and Surgeons	...	...	...	1	...	3	...	...	...	...	...	...	...	...	...	...	...	...	1	1	80
Harvard University Medical School	...	...	...	5	...	5	...	...	...	...	...	7	...	1	...	...	...	...	20	...	330
Tufts College Medical School	...	...	1	...	1	6	...	...	...	...	...	...	...	...	1	...	...	...	14	...	273
Detroit College of Medicine	...	...	...	...	...	...	...	1	...	...	...	1	...	...	2	...	...	...	...	...	1
Saginaw Valley Medical College	...	...	...	...	1	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	1
Univ. of Mich. Dept. of Med. and Surg.	2	...	1	4	1	1	...	...	1	3	...	25	1	14	11	2	2	...	...	...	2
Grand Rapids Medical College	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
University of Michigan Homeo. Med. Coll.	1	...	...	...	...	...	...	...	...	...	...	1	...	6	...	...	...	...	2	...	1
Michigan College of Medicine and Surgery	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Detroit Homeopathic Medical College	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
College of Homeo. M. and S., Univ. of Minn.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hamline University College of Medicine	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
University of Minn. College of M. and S.	...	...	...	1	...	...	...	...	...	...	...	2	...	...	13	2	...	...	...	...	...
Medico-Chirurgical College	...	...	2	1	1	...	...	...	...	...	...	3	3	...	1	19	...	2	...	...	1
Ensworth Medical College	...	...	...	...	...	...	...	...	...	...	...	2	...	...	7	8	1	...	...	...	...
Woman's Medical College	...	...	3	...	2	...	...	...	...	...	...	...	1	...	...	2	...	...	...	...	...
Central Medical College	...	...	...	...	1	...	...	...	...	...	1	...	1	2	5	10	...	...	...	...	...
Barnes Medical College	1	...	30	...	2	1	...	...	1	...	2	99	12	10	18	15	8	1	...	...	1
University Medical College of Kansas City	...	...	...	2	1	...	...	...	...	...	...	4	4	...	7	80	...	...	...	...	...
Kansas City Hahnemann Medical College	...	...	...	2	...	...	...	...	1	...	...	...	...	1	1	26	1	...	...	...	...
Marion-Sims-Beaumont College of Medicine	...	1	6	2	1	...	...	...	...	...	...	133	1	9	11	20	1	3	...	...	...
St. Louis Coll. of Phys. and Surgs	1	...	15	...	1	...	...	...	...	...	1	82	3	8	21	4	9	1	...	...	...
American Medical College	...	...	10	...	...	...	...	...	...	...	1	13	2	...	3	...	...	1	...	...	...
Kansas City Medical College	...	...	...	...	2	...	...	...	...	...	...	3	...	...	...	59	1	...	...	...	1
Univ. of the State of Missouri Med. Dept.	...	...	...	...	...	...	...	...	...	...	1	3	...	1	2	1	...	2	...	...	...
Med. Dept. Washington University	...	...	12	1	3	...	...	...	...	...	1	74	3	3	5	5	3	2	...	...	...
Homeopathic Medical College of Missouri	...	...	...	...	...	...	...	...	...	...	1	15	2	3	...	13	2	...	...	...	...
Eclectic Medical University	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	28	...	1	...	...	...
University of Nebraska Coll of Med	...	...	...	...	2	...	...	...	...	...	...	...	...	...	26	...	...	...	...	...	...
Lincoln Medical College	...	...	...	...	...	...	...	...	...	...	...	1	...	1	1	12	1	...	...	...	...
John A. Creighton Medical College	...	...	...	...	1	...	...	...	...	...	...	...	...	1	26	4	...	...	...	...	18
Dartmouth Medical School	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...
Union University Albany Medical College	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5
Cornell University Medical College	2	...	...	...	...	3	...	3	...	...	...	1	...	2	1	...	...	1	1	...	...

* The total number of students from each state is given at the top of each column.

Michigan.—810	Minnesota.—538	Mississippi.—557	Missouri.—285	Montana.—34	Nebraska.—429	N. H'mpsh're.—141	New Jersey.—510	New Mexico.—9	New York.—2414	Nevada.—11	N. Carolina.—402	N. Dakota.—98	Ohio.—1289	Oklahoma.—92	Oregon.—153	Pennsyl'nia.—2119	R. Island.—125	S. Carolina.—252	S. Dakota.—94	Tennessee.—627	Texas.—916	Utah.—60	Vermont.—169	Virginia.—615	Washington.—91	W. Virginia.—358	Wisconsin.—678	Wyoming.—19	Canada.—203	Foreign.—345	Total.—27327
		1																						1							94
		6																													145
		1	12																		2-7	1	1	1	1				7	19	146
3			1		3		1		3		1		10		3	1	1				1				8		1		2	1	212
				1						1		1			2										2			4		4	60
1	12				3				2						2	2											2				106
			1																					1						6
			1						1																						38
				1						1					1									2					2	115
					2								1			2					1					1					29
	1		1	1	1		1		1				1	1	1	1											1				63
			2		1			1	5		2					2						3		1	1		7	1	1	3	130
					1		1		8				1			3	4	1					2				1		2	4	145
		1	1				1		2		6		4			10	2	14		1	3			10			1			16	141
3	5	4	2	1	3	2	3		18		6	2	8	1	1	25		1		7	5	1	3	32	1	4	4			7	260
1		1				1			13		1					13	6	1		1	1		1	8	1	2				3	144
		1							1		2							7			2					1				1	200
											1					1		13													110
																				1											46
		1		2	1	3			4		1	1	10			1					2	1	2		3	1	5		3	9	88
8				1		1							7		1						3						7			4	113
6				1		2			2				6			1			1						1		9			1	130
8				1		1		1					2			6					3	1		2			3		3	3	76
1				3		1			2				2			6															330
15	12	2	9	4	5			1	1			7	17	2	1	6		1	6	1					2	1	58		6	5	685
1	1		1		1				2				1			1		1		1	1			1	1		1		2	1	107
10	3			2	2		1		10				8			5				2		1	2		2		8		4	3	195
3	4		2		1				3							1			2								2		1		90
4	5	5	6				2		10		1	2	18			17	1	2	2	1	23	3			2	4	8				265
12	14		14	2	20				2				12	2	4	7	1	1	16		4	4	1		7		71	1	1	4	608
28	39	3	28	2	32	1			4		1	6	41	7	7	7	2	2	8	6	16	10	1		9	3	127	1	11	9	1047
3	2	2	3	1	1			1	3		1	1	3	1		2			6		3	1		2		1	3		2	3	173
	4		3	1	1		2		1	1	2	2	2		1	4	1		4	2	1	1	2	2	1		5		1	1	126
													8																	2	115
													1																		28
									1		1		8																		332
													3		2					1					1	1				2	29
1		1											7														2		1		46
3	7		23		2		1		1			1		3		2			3								5		1		243
	1															1			1										1		66
	3				11														6												72
1																															35
	1				1		1									1			3								2				251
1			11						1				1								2								1		52
			2					1						1		1										1		1			101
																															31
		14											9							11	27			1	5					421
	1	29	1								7		5	4		2		1		2	30			4	2	13	1			3	257
			2						4				1											1							26
1	3	6	9	1							1	1	10			5	1		2	8	25		2	8	1	13	5		2	1	290
			1										1																		22
		2	5		2						2		6							8	19			2		11				1	227
		18	10	1	1			1	3		5		3	1		2		2		8	9			4	1	19				2	330
		13	1						2									1		1	5					1					42
		65	1											2				3		4	50								3	405
						3																	1						1		100
		1			1	13	34		21		5		8			67	13	3		1	2		12	7		23	1		9	7	410
							5		10				2			6					1		1	2		8					58
1				1			26		23		4		11			54	14	7			2	9		9		28			2	19	315
3	3	1	4		1	2	8		22		5	1	9		4	21	1		1	1	4		2	11		2	11		1		257
																7								1					1		26
			1		1	3	5		14		56		2			15	2	26		2	2			30		16			21		392
							1		2							2										1						16
1		12				4	3		7		7		2			8	1	9		1	8		1	16		47			1	3	204
1						5	1		4				1		1	2	3				1			1	2			1	2	6	127
						2			9				1			1	4						1	4						9	117
			2		1	17			6			1	4			2	18			1	1		6		1				1	3	432
1						18			3							1	11	1		2		1	7				1	1	6	349
170						1	1		5			5	7				1									1			60	1	257
67									2				1											1					10		85
245	3		2	2	4		3		37	1	2	7	25	1		18		1	1	2		2	5	2	4	1	6	1	2	6	455
47													3																	1	52
41	2			3					10				3			5												1			76
351													4															10	1	66
29									4				5			3												8	1	52
	16																		1								1				18
	102											15							1								4		1		123
2	252								1			14			1				6					1		19		1		315
			38		4			1						3					2	2											83
			83		7																		1						1		110
			4											2							1			1							16
1			41	1	5				1					7		1			1					1							80
3	7	3	213		3			2	3			1	4	6		3			2	4	22	1		2	2	8	2	1	1	1	495
			101		6								1	9							3	1		2				1				222
			19		4				3				1	6					2	1						1	1			1		71
	1	2	144	1	1							23	1			1			2	2	10	3			2	2		1	2	5	391
	4	3	85	1					3		1		5	4	1	3					12	1				1					270
			41						1					1	1	2				1	1										78
	3		44											3		1				1					5						122
		1	71		1				3				1	2		4			1					1		2			1		98
	1		146		2							2	5	1							6	1		1	2		1			1	281
			25		2									1							1		1								66
			27											2							1										61
2	1				103														3									1			138
1	1				66																										86
	3			1	96								1	3																1	142
						29	2		2														7								65
							1		152							1							3			1			1		165
1			1		1		21		326		1		5		1	4	6					1				1			3	3	394

NAME OF COLLEGE.	Alabama.—524	Arizona.—4	Arkansas.—561	California.—612	Colorado.—195	Connecticut.—290	Delaware.—60	D. of Colum.—139	Florida.—115	Georgia.—463	Idaho.—28	Illinois.—2619	Indian Ter.—103	Indiana.—1111	Iowa.—1095	Kansas.—612	Kentucky.—1016	Louisiana.—470	Maine.—281	Maryland.—465	Massach'ts.—1171
Eclectic Medical College of New York	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
University of Buffalo Medical Department	...	...	...	...	...	5	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Long Island College Hospital	...	...	...	...	...	8	...	...	...	...	...	...	...	...	...	...	1	...	1	...	4
New York Homeopathic Med. Coll. and Hosp.	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	1	...	4
Syracuse University School of Medicine	...	...	...	...	...	29	...	...	...	...	...	5	...	3	2	1	5	...	4	...	29
College of Physicians and Surgeons	4	...	2	3	3	29	1	1	2	6	...	5	...	3	2	1	5	...	4	...	29
New York Med. Coll. and Hosp. for Women	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3
University and Bellevue Hosp. Med. Coll.	...	...	...	...	...	11	...	1	1	4	...	3	...	2	4	...	3	...	1	1	13
Leonard Medical College	5	...	1	...	...	...	...	1	2	4	...	1	...	...	...	...	...	...	...	...	1
University of North Carolina Med. Dept.	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
North Carolina Medical College	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Cleveland Coll. of Phys. and Surgs.	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	1	...	...	...	1
Cleveland Homeopathic Medical College	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Eclectic Medical Institute	...	...	1	1	1	...	...	1	...	1	...	8	...	16	...	2	16	...	...	...	...
Medical College of Ohio	1	...	...	...	...	...	...	...	...	...	...	2	...	10	...	1	23	...	...	...	...
Med. Dept. Western Reserve University	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Miami Medical College	...	...	...	...	...	...	...	...	1	...	...	2	...	10	...	...	13	...	...	...	...
Ohio Medical University	...	...	1	...	...	...	...	...	...	...	...	1	...	2	...	...	2	...	1	1	2
Pulte Medical College	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	3	...	...	2	...
Starling Medical College	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Toledo Medical College	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...
University of Oregon Medical Department	...	...	...	3	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Willamette University Medical Department	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dept. of Med. University of Pennsylvania	4	...	...	3	1	6	6	3	3	1	...	7	...	4	4	...	6	...	7	10	7
Hahnemann Medical College and Hospital	1	...	...	1	...	5	4	1	...	...	...	...	...	2	...	...	...	...	2	3	4
Jefferson Medical College	1	...	2	4	...	9	14	...	1	3	1	8	...	10	9	2	4	...	8	5	30
Western Pennsylvania Medical College	...	...	...	...	...	...	...	...	...	...	...	4	...	8	...	...	...	...	...	3	...
Temple College Department of Medicine	...	...	...	...	...	...	...	1	...	...	...	2	...	...	...	1	...	...	...	...	...
Woman's Medical College of Pennsylvania	...	...	...	...	...	5	2	1	...	...	1	3	...	1	2	3	2	1	2	1	16
Medico-Chirurgical Coll. of Philadelphia	...	...	1	1	...	1	9	...	1	1	...	1	...	...	1	...	5	...	1	2	6
Med. Coll. of the State of South Carolina	...	...	...	...	...	...	...	...	2	1	...	...	...	1	...	...	...	...	...	...	...
Chattanooga National Medical College	...	...	...	...	...	...	...	...	...	3	...	...	...	...	...	...	1	...	...	...	...
Med. Dept. University of Tennessee	8	...	1	...	...	...	...	...	1	...	...	1	3	...	...	...	22	8	...	...	...
Chattanooga Medical College	49	...	7	1	2	...	...	1	2	27	...	3	2	...	2	...	9	2	1	...	...
Meharry Medical College	18	...	23	...	...	2	...	...	17	14	...	6	...	...	...	4	15	13	...	...	...
Memphis Hospital Medical College	31	...	129	...	...	...	...	...	1	7	...	...	18	1	1	1	4	83	...	...	...
Med. Dept. University of the South	16	...	11	...	...	...	...	...	8	16	...	...	...	1	...	...	5	28	...	...	1
Tennessee Medical College	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	9	...	...	...	...
University of Nashville Medical Department	25	...	22	...	...	...	...	...	4	4	...	3	1	2	...	...	19	33	...	...	...
Vanderbilt University Medical Department	17	...	3	2	...	1	...	...	...	2	...	2	2	...	...	...	12	2	1	...	...
Knoxville Medical College	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	1	...	...	...
Medical Department Ft. Worth University	...	...	1	...	...	...	...	...	...	...	...	...	...	7	...	...	1	2	...	...	...
Physio-Medical College of Texas	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Medical Department University of Texas	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Baylor University Medical College	...	...	...	...	...	...	...	...	...	...	...	1	6	...	...	...	...	3	...	...	...
Dallas Medical College	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
University of Vermont Medical Department	...	...	...	...	...	18	1	...	...	...	...	1	...	...	...	...	...	...	9	1	37
University College of Medicine	...	...	...	...	...	...	...	...	4	2	...	...	...	...	...	...	...	...	...	...	1
University of Virginia Dept. of Med.	11	...	...	...	...	1	...	2	2	3	...	...	...	...	...	...	3	6	...	5	1
Medical College of Virginia	...	...	1	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	2
Wisconsin College of Phys. and Surgs.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Milwaukee Medical College	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...

Societies.

Medical Society of Nova Scotia.—The following officers were elected at the recent annual meeting held at Antigonish, July 1 and 2; President, Dr. M. Chisholm, Halifax; vice-presidents, Drs. Henry E. Kendall, Sydney, and Henry K. Macdonald, Lunenburg, and secretary-treasurer, Dr. W. Huntley Macdonald, Antigonish. Halifax was selected as the next place of meeting.

American Microscopical Society.—At the annual meeting held at Winona Lake, July 29, 30 and 31, the following officers were elected: President, Prof. Thomas J. Burrill, University of Illinois; vice-presidents, Prof. H. A. Weber, Columbus, and F. W. Kuhn, Fort Warner; secretaries, Profs. H. B. Ward, and R. H. Walcott, University of Nebraska, and treasurer, J. C. Smith, New Orleans.

Central Wisconsin Medical Society.—At the annual meeting held in Madison, July 28, the following officers were elected: President, Dr. Edward Evans, La Crosse; vice-presidents, Drs. Thomas W. Nuzum, Brodhead, Ledyard V. Lewis, Sun Prairie, William H. Palmer, Janesville, and Charles R. Pickering, Muscoda; censors, Drs. Walter F. McCabe, Beloit, Theodore W. Evans, Madison, J. C. Cutler, Verona, and W. E. L. Froggart, Cross Plains, and Dr. Charles S. Sheldon, Madison, secretary and treasurer.

Maritime Medical Association.—The thirteenth annual meeting was held at St. John, N. B., July 22 and 23, under the presidency of Dr. Murray MacLaren of St. John. Dr. Galen M. Woodcock, Bangor, was present as a representative of the Maine Medical Association. Drs. Maurice Richardson and E. W. Cushing of Boston were present and contributed papers. The following officers were elected: President, Dr. George M. Campbell, Halifax, N. S.; vice-presidents—for Nova Scotia, Dr. William H. Macdonald, Rose Bay; for New Brunswick, Dr. Alban F. Emery, St. John, and for Prince Edward Island, Dr. Alexander MacNeil, Summerside; treasurer, Dr. John Sutherland, Bedeque, Prince Edward Island, and secretary, Dr. T. D. Walker, St. John, N. B.

NATIONAL CONFEDERATION OF STATE MEDICAL EXAMINING AND LICENSING BOARDS.

Report of the Committee on Curriculum, made at the Annual Session, held in New Orleans, May 4, 1903.

Dr. George W. Webster, chairman of the committee, president of the Illinois State Board of Health, and professor of physical diagnosis and clinical medicine in Northwestern University Medical School, Chicago, read the following report:

Mr. President and Members of the Confederation:

At the meeting of the confederation last year a Committee on Curriculum was appointed, in accordance with the recommendation of Dr. N. R. Coleman in his presidential address. I had the honor to be made chairman of the committee, and it is only fair to the other members of the committee to state that the following report represents only my own personal work and personal views. I make this statement in order that any criticisms may be directed against me and not against the other members of the committee.

In the interests of a higher and improved standard of medical education, and of interstate reciprocity in licensure, and in order that the degree of M.D. may have a definite meaning, at least an approach to a uniform, fixed value, it is desirable that a minimum standard of requirements for graduation in medicine shall be established and maintained.

Michigan.—810	Minnesota.—538	Mississippi.—557	Missouri.—285	Montana.—34	Nebraska.—429	N. H'mpsh'e.—141	New Jersey.—510	New Mexico.—9	New York.—2414	Nevada.—11	N. Carolina.—402	N. Dakota.—98	Ohio.—1289	Oklahoma.—92	Oregon.—153	Pennsyl'nia.—2119	R. Island.—125	S. Carolina.—252	S. Dakota.—94	Tennessee.—627	Texas.—916	Utah.—60	Vermont.—169	Virginia.—615	Washington.—91	W. Virginia.—358	Wisconsin.—678	Wyoming.—19	Canada.—203	Foreign.—345	Total.—27327
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...	1	...	2	...	1	4	38	...	180	...	...	...	8	...	1	7	1	...	...	...	3	5	2	...	...	...	...	2	3	9	311
...	...	4	...	...	...	...	2	...	3	...	29	...	...	...	...	10	...	15	...	...	2	...	...	24	...	3	...	...	...	6	113
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1	3	3	2	1	2	2	63	...	24	...	13	...	24	...	5	470	5	1	1	...	5	2	2	5	...	7	3	...	1	15	771
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...	...	14	1	...	1	...	4	...	2	...	27	1	4	1	...	1	1	3	...	75	6	1	...	3	...	8	1	...	1	1	264
1	...	24	14	...	...	...	...	...	1	...	1	...	4	1	...	2	...	14	...	47	20	...	...	1	...	2	...	...	...	8	252
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One of the inalienable constitutional rights of the state is the establishment of standards and the enforcement of regulations in regard to medical education. It seems to be of vital importance that we establish a minimum standard of work in a medical curriculum, to which all states can agree, or to which at least a majority can agree and then have each board of examiners or state board of health adopt this as its standard, just as the National Educational Association did in standardizing the high school course.

The first question is, how shall this standard be obtained or determined; and second, how secure compliance with its requirements? This will never be accomplished by the colleges themselves, nor will it be done by such associations as the American Medical College Association, the Southern Medical College Association, the American Institute of Homeopathy, or similar organizations.

The colleges are many of them influenced, dominated by financial considerations, the spirit of trade, and the college associations by sectarian bias or dogma, and they lack the authority to establish standards and compel recognition of them or conformity to them. This standard can, in my opinion, be established, maintained, compliance with its requirements enforced, only by the concerted action of the various boards of health and examining boards of the Union.

Heretofore the standards established by the American Medical College Association and other similar organizations, have been an outline or definition of a "medical course" in the most indefinite terms: For example, "four years of six months each, in four separate calendar years." Not a word in regard to the number of hours of work in each month or in each year and no specifications in regard to relative amount of time devoted to each study in the curriculum, the order or sequence in which studies should follow each other in the course, nothing in regard to whether the work should consist of lectures only, or of laboratory work, recitations, lectures, and clinics combined, and especially the relative amount of time devoted to each, especially clinics.

The same is true of the requirements of the state examining boards as a general rule. In many states some of the colleges aim no higher than the compulsory standards established by their respective state boards, and if the latter are indefinite and elastic those of the medical school are equally nebulous and hazy. A glance at the curriculums of the various medical colleges shows the same wide variations, no two being alike, either in total number of hours of instruction, total hours in any one year or the time devoted to any one subject in the curriculum. The total hours vary from 5,000 in some to a little over 2,000 in others. The time devoted to clinical instruction varies from over 2,000 hours in some down to a little over 200 in others. The same is true of every subject in the curriculum. Over 500 hours are devoted to the subject of chemistry in some schools, and less than half as many in others. Anatomy varies from over 1,200 as a maximum to 200 as a minimum. One school devotes over 400 hours to the study of physiology, while another has less than 100. Medicine has over 1,200 hours in one and less than 200 in another. In other schools such important subjects as physical diagnosis, pharmacology, etiology and hygiene are not taught at all.

THE CIRCULAR LETTER.

With a view of ascertaining what is actually being done, rather than asking advice as to what should be done, I sent the following circular letter to each medical college in the United States:

Dear Doctor:—At a meeting of the National Confederation of State Medical Examining and Licensing Boards, held at Saratoga, June 9, 1902, I had the honor to be elected chairman of the executive committee of the general committee on curriculum.

I am sending you this communication to ask your assistance and advice in the preparation of my report, which is to be made to the confederation at New Orleans, May 4, 1903.

I am enclosing a list of studies usually embraced in the curriculum of a medical course. Will you, at your earliest possible convenience, fill out this schedule, giving the number of hours devoted to each of the studies named in the medical school of which you are the secretary? If the studies are not put down in the proper year, please change to correspond with the work of your school.

For the sake of advancement in medical teaching, and as one of the elements for a basis of interstate reciprocity, uniformity in the length and character of the medical course seems desirable. That I may have the benefit of the views of the leading educators in medicine on this very important point, I would respectfully request replies to the following questions:

1. Aside from the teaching in materia medica, practice and therapeutics, is a uniform curriculum in all the medical schools of the United States desirable?
2. Is it possible?
3. If desirable and possible, how, in your opinion, is it to be established?
4. Dividing the work under the following heads: Lectures, recitations, laboratory work, clinics, what relative time should be devoted to each?
5. How many hours of actual work in each college year?
6. Over how many months should this be distributed?
7. Over how many years?
8. Do you favor elective work, and if so, in what branches?
9. Any suggestions as to the work or the report of this committee will be gratefully received.

In addition to the answers to the questions, I requested each secretary or dean to fill out the following blank form which I sent him, showing the number of hours devoted to each study in the entire curriculum, and divided the work into lectures, recitations, laboratory work and clinics, extending over a four-year course.

FIRST YEAR.	CLINICS.	LECTURES.	RECITATIONS.	LABORATORY.
Chemistry.				
Anatomy.				
Histology and Embryology.				
Physiology.				
Pharmacology.				
Physical Diagnosis.				
Surgery.				
Total Hours of Instruction.				
SECOND YEAR.				
Chemistry.				
Anatomy.				
Physiology.				
Pharmacology.				
Bacteriology.				
Etiology and Hygiene.				
Pathology.				
Physical Diagnosis.				
Surgery.				
Medicine.				
Total Hours of Instruction.				
THIRD YEAR.				
Pathology.				
Obstetrics.				
Dermatology and Syphilology.				
Laryngology and Rhinology.				
Pediatrics.				
Surgery.				
Medicine.				
Total Hours of Instruction.				
FOURTH YEAR.				
Obstetrics.				
Ophthalmology and Otology.				
Gynecology.				
Neurology.				
Mental Diseases and Jurisprudence.				
Surgery.				
Medicine.				
Total Hours of Instruction.				
Total Hours of Instruction in Four Years.				

Name of Medical School.
Signature and Address of Secretary of Dean.

I received the courtesy of a reply from about 20 per cent., and gratefully acknowledge the same at this time. The following statistics have been made up from the reports sent in, as far as it was available. In addition to this, the blank forms have been filled in by myself from information taken from the annual announcements of the colleges. More would have been added had it not been for the fact that the announcements are not definite enough and of such a character as to enable me to determine how much time a particular school devotes to any one study, nor the total number of hours of clinics, lectures, recitations or laboratory work in any one year, or in the entire course.

This doubtless accounts for the failure of so many medical schools to answer my letter or fill out the blank forms.

Every effort has been made to have these statistics as reliable as possible. In compiling these statistics many errors have doubtless crept in, and for any such I offer sincere apologies at this time and will very gratefully acknowledge any corrections which may be sent me. It is my purpose to continue this work and to secure this information from every school in the United States and to present a complete report next year.

Some of the statistics furnished this year had to be discarded because of their very evident unreliability. For example, one school gave as the grand total of hours of instruction in the four years over 25,000. This would make over 30 hours a day, including Sundays and holidays.

From these statistics I have constructed the following tables: First, a table showing the total number of hours of work in each of the four years of the medical course, and the grand total of hours in the entire four-year course. The sum of the latter, divided by the number of schools, gives the average number of hours of instruction in these 43 medical schools. (See Table 4.)

A second table gives the number of hours devoted to each study in each of said schools. The total number of hours devoted to any one branch in all the schools divided by the number of colleges gives us the average number of hours devoted to that particular subject. (See Table 4.)

A third table shows the relative number of hours devoted to clinical instruction.

Finally, a fourth table has been constructed which sums up all the foregoing and condenses it into what might be termed an average curriculum which might be adopted and then required as a minimum standard by the various examining boards.

Against this average curriculum it might be urged that it does not represent the average of work done in all the medical colleges of the United States. This is true, but it does represent the work of those schools from which at least half of the graduates come each year. For example, there were about 5,000 graduates in 1902. The graduates from the colleges in this list made up about 2,500 of that total.

ANSWERS TO QUESTIONS.

Question 1.—Yes, 19; no, 6; doubtful, 1.

Question 2.—Yes, 7; no, 8; doubtful, 10.

Question 3.—"The development of interstate reciprocity will help materially in this direction, as will also the perfected organization of the American Medical Association."—Dr. L. M. Crafts, Hamline University, College of Physicians and Surgeons.

"In my opinion there has to be a different standard in different schools; and it seems to me a Utopian idea to expect that all the medical schools in the country should be based on a uniform curriculum, any more than the various colleges or academies."—C. M. Green, Harvard University.

"Attempts to secure uniformity should only be by frequent conferences of the schools where the matter may be considered on broad and catholic grounds; certainly not by compulsion of the weaker by the stronger, nor by state boards or legislation."—S. Egbert, Medico-Chirurgical College.

"I should be inclined to say that such a condition is impossible of attainment in view of the widely different circumstances surrounding different schools and also because of the widely divergent opinions held by different teachers."—J. C. Oliver, Miami Medical College.

"It should be possible and ought to be regulated by the appointment of a special committee who should determine first the number of years required to cover the course, etc."—G. M. Kober, Georgetown University.

"If established at all it must be by an understanding between state boards of medical examiners and the various medical institutions."—G. H. Price, Vanderbilt University Medical Department.

"The varying conditions that exist in the different medical schools as to the number of students, facilities for laboratory and clinical instruction, and endowment would render such a plan undesirable and impossible."—C. H. Frazier, University of Pennsylvania.

Many no answers at all. A number simply say state board associations.

Question 4.—"It seems to be the tendency of the times to diminish the number of lectures and increase the laboratory work and clinics, recitations being retained as hitherto."—C. M. Green, Harvard University.

Eight no replies. On an average the balance suggest the work given thus: Laboratory, clinics, lectures, recitations, about one-fourth to each.

Question 5.—Average of those giving hours, 1,059.

Question 6.—Average of replies, eight months.

Question 7.—Average of replies, four years.

Question 8.—Yes, 13; no, 10; no replies, 3; most replies "yes" were for specialties.

Question 9.—No suggestions were made.

CONCLUSIONS AS TO QUERIES MADE.

1. At present there is a disgraceful lack of uniformity in the medical curriculum of the medical colleges of the United States.

2. Comparative uniformity in the medical curriculum is desirable in the interests of higher medical education and of interstate reciprocity.

3. It is possible. It can be accomplished by this confederation by adopting a minimum standard and then having this standard adopted by each of the state boards of health or examing and licensing boards.

4. This standard curriculum, which is to be adopted as a minimum requirement for the degree of M.D., should consist of not less than 3,600 hours, divided nearly equally between the four years.

5. The course should consist of four terms in four separate calendar years.

6. There should be at least 900 hours of actual work, or 30 weeks and 30 hours in each week aside from holidays.

7. Clinical work should constitute at least one-fourth of the entire work of the four-year course.

8. The average time devoted to each subject in the curriculum should be approximately that presented in volume two of the advised standard.

9. There should be a minimum standard of required work. If elective work is permitted it should be in addition to the required work.

10. The above is recommended with a full realization of the fact that the value of a college course lies not so much in the facts learned as in the way in which they are learned, the view point obtained, the atmosphere created and that the atmosphere is made, not so much by the dead subjects of its curriculum, but by the living personality of its professors.

It was a realization of this that let a former president of the United States remark that "Mark Hopkins at one end of a log and himself at the other was university enough for him."

In medical education there should be unity of direction, at least comparative uniformity of standards, and the most intelligent methods should prevail.

The ideal curriculum not only compels men to think, but fits them to act, which teaches not only facts, but inculcates correct methods.

GEO. W. WEBSTER, Chairman.
AUG. KORNDOERFER.
J. C. WEBSTER.

TABLE 1.

Name of School.	Clinics.	Lectures.	Quizzes.	Laboratory.	Total Hours in Each Year.	Total Hours in the Entire Medical Course.
c—MEDICO-CHIRURGICAL COLLEGE.						
First year	....	640	....	608	1,248	
Second year	....	544	....	896	1,440	
Third year	720	722	....	....	1,442	
Fourth year	640	576	....	256	1,472	5,602
s—UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE.						
First year	....	304	160	880	1,344	
Second year	32	480	320	800	1,632	
Third year	254	616	240	412	1,522	
Fourth year	502	....	64	448	1,014	5,512
c—UNIVERSITY OF MINNESOTA, DEPARTMENT OF MEDICINE.						
First year	....	340	136	288	764	
Second year	....	356	170	478	1,004	
Third year	703	512	34	315	1,564	
Fourth year	1,555	386	....	....	1,941	5,273
s—WESTERN RESERVE UNIVERSITY, MEDICAL DEPARTMENT.						
First year	....	281	....	1,117	1,398	
Second year	....	426	....	748	1,174	
Third year	423	727	....	208	1,358	
Fourth year	782	268	....	....	1,150	5,080
s—NORTHWESTERN UNIVERSITY, MEDICAL DEPARTMENT.						
First year	....	330	....	830	1,160	
Second year	32	400	....	686	1,118	
Third year	988	336	....	72	1,396	
Fourth year	1,044	272	....	24	1,340	5,014
s—WESTERN PENNSYLVANIA UNIVERSITY, MEDICAL DEPARTMENT.						
First year	....	576	....	540	1,116	
Second year	96	672	....	338	1,104	
Third year	64	736	....	188	1,564	
Fourth year	704	476	....	....	1,180	4,964
s—JEFFERSON MEDICAL COLLEGE.						
First year	....	268	208	620	1,096	
Second year	180	405	75	372	1,032	
Third year	300	360	135	249	1,044	
Fourth year	592	299	390	386	1,667	4,839
s—UNIVERSITY OF MICHIGAN, MEDICAL DEPARTMENT.						
First year	....	480	....	720	1,200	
Second year	....	384	....	720	1,104	
Third year	256	416	....	642	1,314	
Fourth year	608	560	....	....	1,168	4,786
s—COLORADO SCHOOL OF MEDICINE.						
First year	....	402	....	691	1,093	
Second year	....	600	....	703	1,303	
Third year	414	....	....	515	929	
Fourth year	680	....	....	779	1,459	4,784
s—CLEVELAND COLLEGE OF PHYSICIANS AND SURGEONS.						
First year	....	362	....	556	918	
Second year	....	512	....	704	1,216	
Third year	976	352	....	128	1,456	
Fourth year	840	304	....	....	1,144	4,734
s—COLLEGE OF PHYSICIANS AND SURGEONS, SAN FRANCISCO.						
First year	....	329	92	451	872	
Second year	....	496	220	499	1,215	
Third year	452	442	204	70	1,166	
Fourth year	514	480	240	144	1,378	4,631
s—COOPER MEDICAL COLLEGE.						
First year	....	256	....	1,000	1,256	
Second year	....	288	....	560	848	
Third year	384	542	32	128	1,086	
Fourth year	816	382	64	176	1,438	4,628
s—ST. LOUIS COLLEGE OF PHYSICIANS AND SURGEONS.						
First year	75	502	....	400	977	
Second year	90	759	....	463	1,312	
Third year	210	545	....	148	903	
Fourth year	72	759	....	....	1,357	4,549
c—JOHNS HOPKINS UNIVERSITY, MEDICAL DEPARTMENT.						
First year	....	136	156	504	796	
Second year	20	104	32	856	1,012	
Third year	432	426	64	212	1,134	
Fourth year	1,152	278	128	32	1,590	4,532
s—ATLANTA COLLEGE OF PHYSICIANS AND SURGEONS.						
First year	....	286	234	520	1,040	
Second year	....	328	260	910	1,408	
Third year	260	364	182	260	1,066	
Fourth year	338	416	156	....	910	4,424
s—CORNELL UNIVERSITY, MEDICAL DEPARTMENT.						
First year	....	169	249	574	992	
Second year	....	233	351	728	1,312	
Third year	432	139	289	300	1,160	
Fourth year	560	137	170	....	867	4,331

TABLE 1.—*Continued.*

Name of School.	Clinics.	Lectures.	Quizzes.	Laboratory.	Total Hours in Each Year.	Total Hours in the Entire Medical Course.
s—UNIVERSITY OF TEXAS, MEDICAL DEPARTMENT.						
First year	....	252	56	502	810	
Second year	....	270	56	690	1,016	
Third year	294	346	56	424	1,120	
Fourth year	728	420	56	168	1,372	4,318
c—UNIVERSITY OF CALIFORNIA, MEDICAL DEPARTMENT.						
First year	....	1,008	....	252	1,260	
Second year	....	162	....	1,082	1,244	
Third year	252	324	....	576	1,152	
Fourth year	414	80	....	144	638	4,294
s—HAMLINE UNIVERSITY, MEDICAL DEPARTMENT.						
First year	....	352	124	400	876	
Second year	....	407	135	458	1,000	
Third year	342	515	182	....	1,039	
Fourth year	667	543	148	....	1,358	4,273
c—UNIVERSITY OF IOWA, MEDICAL DEPARTMENT.						
First year	....	441	36	396	873	
Second year	....	339	171	312	822	
Third year	252	646	167	189	1,255	
Fourth year	534	582	90	....	1,206	4,156
c—DETROIT COLLEGE OF MEDICINE.						
First year	192	480	....	384	1,056	
Second year	192	512	....	432	1,136	
Third year	256	528	....	192	976	
Fourth year	256	576	....	48	880	4,048
c—COLLEGE OF PHYSICIANS AND SURGEONS, CHICAGO.						
First year	60	420	....	575	1,005	
Second year	60	435	....	510	1,005	
Third year	90	225	390	60	765	
Fourth year	750	475	....	....	1,225	4,005
s—VANDERBILT UNIVERSITY, NASHVILLE, TENN.						
First year	....	312	104	520	936	
Second year	....	312	78	416	806	
Third year	260	416	156	156	988	
Fourth year	286	468	130	312	1,196	3,926
c—MEDICAL SCHOOL OF HARVARD UNIVERSITY.						
First year	....	308	36	846	1,190	
Second year	56	458	....	540	1,064	
Third year	538	304	104	....	946	
Fourth year	449	185	....	....	634	3,824
s—WISCONSIN COLLEGE OF PHYSICIANS AND SURGEONS.						
First year	....	150	210	432	792	
Second year	....	294	270	540	1,104	
Third year	332	165	285	30	812	
Fourth year	594	480	....	....	1,074	3,782
c—UNIVERSITY MEDICAL COLLEGE.						
First year	....	504	....	400	904	
Second year	....	630	....	456	1,086	
Third year	....	588	....	56	644	
Fourth year	532	588	....	....	1,120	3,754
c—UNIVERSITY OF BUFFALO, MEDICAL DEPARTMENT.						
First year	32	538	....	304	874	
Second year	....	688	....	268	956	
Third year	32	534	....	352	918	
Fourth year	694	250	....	32	916	3,724
s—UNIVERSITY OF LOUISVILLE, MEDICAL DEPARTMENT.						
First year	....	312	312	314	938	
Second year	....	312	286	236	834	
Third year	234	442	130	234	1,040	
Fourth year	300	436	104	72	912	3,724
s—GEORGETOWN UNIVERSITY, MEDICAL DEPARTMENT.						
First year	....	419	31	356	806	
Second year	....	363	31	396	790	
Third year	426	495	....	111	1,032	
Fourth year	490	478	....	63	1,031	3,659
c—MARION-SIMS MEDICAL COLLEGE.						
First year	....	294	126	372	792	
Second year	....	322	308	288	918	
Third year	112	476	....	112	700	
Fourth year	448	644	98	56	1,246	3,656
s—PULTE MEDICAL COLLEGE.						
First year	84	308	28	288	708	
Second year	112	196	56	530	902	
Third year	448	476	28	56	1,008	
Fourth year	416	522	28	42	1,008	3,626
s—UNIVERSITY COLLEGE OF MEDICINE, VIRGINIA.						
First year	....	251	115	351	817	
Second year	....	242	110	256	608	
Third year	241	444	203	....	888	
Fourth year	269	457	190	14	930	3,243
s—DARTMOUTH MEDICAL COLLEGE.						
First year	....	51	130	559	740	
Second year	....	....	134	670	804	
Third year	90	300	307	116	813	
Fourth year	140	361	324	....	825	3,182
c—DENVER AND GROSS MEDICAL COLLEGE.						
First year	....	384	50	217	651	
Second year	....	432	10	281	723	
Third year	260	480	....	80	820	
Fourth year	384	576	....	....	960	3,154
s—COLUMBIAN UNIVERSITY, MEDICAL DEPARTMENT.						
First year	....	195	135	426	756	
Second year	....	285	225	252	762	
Third year	378	248	105	120	851	
Fourth year	372	171	30	164	737	3,106
s—MIAMI MEDICAL COLLEGE.						
First year	....	196	168	470	834	
Second year	....	312	84	452	848	
Third year	224	364	84	....	672	
Fourth year	300	296	28	44	668	3,022
s—FORT WORTH UNIVERSITY, MEDICAL DEPARTMENT.						
First year	....	218	182	264	664	
Second year	....	222	104	478	804	
Third year	286	390	....	96	772	
Fourth year	286	366	....	....	652	2,892
c—KEOKUK MEDICAL COLLEGE.						
First year	....	334	140	295	769	
Second year	....	470	168	135	773	
Third year	....	504	112	75	691	
Fourth year	....	420	196	....	616	2,849
s—UNIVERSITY OF PENNSYLVANIA, MEDICAL DEPARTMENT.						
First year	....	267	....	737	804	
Second year	....	288	....	122	410	
Third year	192	224	268	118	802	
Fourth year	346	175	182	12	715	2,731
s—CENTRAL MEDICAL COLLEGE, ST. JOSEPH.						
First year	....	536	....	130	666	
Second year	104	546	....	104	754	
Third year	104	442	....	....	546	
Fourth year	130	468	....	....	598	2,564
s—UNIVERSITY OF VIRGINIA, MEDICAL DEPARTMENT.						
First year	....	370	66	150	586	
Second year	200	485	38	93	816	
Third year	....	285	30	25	340	
Fourth year	120	252	15	10	397	2,139

EXPLANATIONS OF TABLES 1 AND 2.

c Before the names of colleges means report taken from catalogue.

s Before the names of colleges means report taken from replies by secretaries.

x In the column giving the general average in any one subject means the subject is taught but included in some other subject.

o In the column giving the general average in any one subject means the subject is not taught at all.

SUMMARY OF TABLE 1.

TOTAL NUMBER OF HOURS DEVOTED TO THE MEDICAL COURSE IN THE FOLLOWING SCHOOLS.

NAME OF SCHOOL.	Hours.
Medico-Chirurgical College	5,602
University and Bellevue Hospital Medical College	5,512
University of Minnesota, Medical Department	5,273
Western Reserve University, Medical Department	5,080
Northwestern University, Medical Department	5,014
Western Pennsylvania, Medical Department	4,964
Jefferson Medical College	4,839
University of Michigan, Medical Department	4,786
Colorado School of Medicine, University of Colorado	4,784
Cleveland College of Physicians and Surgeons	4,734
College of Physicians and Surgeons, San Francisco	4,631
Cooper Medical College	4,628
St. Louis College of Physicians and Surgeons	4,549
Johns Hopkins University, Medical Department	4,532
Atlanta College of Physicians and Surgeons	4,424
Cornell University, Medical Department	4,331
University of Texas, Medical Department	4,318
University of California, Medical Department	4,294
Hamline University, College of Physicians and Surgeons	4,273
University of Iowa, Medical Department	4,156
Detroit Medical College	4,048
College of Physicians and Surgeons, Chicago	4,005
Vanderbilt University, Medical Department	3,926
Harvard University, Medical Department	3,824
Wisconsin College of Physicians and Surgeons	3,782
University Medical College, Kansas	3,754
University of Buffalo, Medical Department	3,724
University of Louisville, Medical Department	3,724
Georgetown University, Medical Department	3,659
Marion-Sims Medical College	3,656
Pulte Medical College	3,626
University College of Medicine, Virginia	3,243
Dartmouth Medical College	3,182
Denver and Gross Medical College	3,154
Columbian University, Medical Department	3,106
Miami Medical College	3,022
Fort Worth University, Medical Department	2,892
Keokuk Medical College	2,849
University of Pennsylvania, Medical Department	2,731
Central Medical College, St. Joseph, Mo.	2,564
University of Virginia, Medical Department	2,139

TABLE 2.

NAME OF SCHOOL.	Chemistry.	Anatomy.	Histology and Embryology.	Physiology.	Pharmacology.	Physical Diagnosis.	Surgery.	Bacteriology.	Etiology and Hygiene.	Pathology.	Medicine.	Obstetrics.	Dermatology and Syphilology.	Laryngology and Rhinology.	Pediatrics.	Ophthalmology and Otology.	Gynecology.	Neurology.	Mental Dis. and Jurisprudence.
c Medico-Chirurgical College....	384	896	96	288	256	112	930	192	192	384	544	352	112	64	96	192	160	96	32
s Univ. and Bellevue Hosp. Coll.	576	1248	160	320	352	96	892	64	o	400	816	160	x	x	48	112	208	56	32
c Univ. of Minnesota, Med. Dept.	390	438	450	374	204	o	621	176	x	327	1020	128	140	138	156	218	242	208	x
s West. Reserve Univ., Med. Dept.	350	1068	353	420	372	105	549	117	70	492	140	67	67	75	35	75	120	77	23
s Northwest. Univ., Med. Dept..	490	624	232	236	168	112	1064	176	32	240	536	160	112	96	96	176	320	112	32
s West. Penn. Univ., Med. Dept.	256	436	320	352	544	64	1168	192	o	242	1232	160	o	o	32	44	32	o	48
s Jefferson Medical College.....	271	612	252	204	236	44	1001	o	45	411	638	216	128	98	98	178	233	136	128
s Univ. of Michigan, Med. Dept.	568	568	276	308	128	o	560	228	48	199	412	132	96	36	o	160	224	160	48
s Colorado School of Medicine..	340	542	288	380	282	o	364	255	36	320	690	180	72	72	108	356	252	216	18
s Cleveland Coll. of P. and S..	320	576	214	384	96	96	788	192	36	320	820	76	60	96	224	92	96	96	92
s Coll. of P. & S., San Francisco	306	596	65	450	60	30	684	60	o	484	684	246	72	72	72	168	180	36	48
s Cooper Medical College.....	384	648	416	256	192	64	864	45	32	339	608	160	32	32	124	176	96	96	64
s St. Louis Coll. of P. and S...	412	503	105	434	275	165	661	50	80	150	435	220	90	198	130	143	152	112	x
c Johns Hopkins Med. School..	240	796	90	212	184	32	580	128	x	368	640	416	104	104	104	104	368	188	x
s Atlanta College of P. and S.	390	884	274	156	o	o	546	364	o	624	432	234	26	78	o	130	104	52	o
s Cornell Univ. Med. College...	392	748	380	248	342	o	569	96	24	448	350	297	25	33	83	53	o	72	15
s Univ. of Texas, Med. Dept...	336	560	169	294	196	28	692	90	136	504	524	140	28	168	112	x	182	56	28
c Univ. of California, Med. Dept.	180	936	324	378	108	108	712	216	o	504	774	144	72	72	108	o	126	o	o
s Hamline Univ., Med. Dept....	390	438	450	374	201	o	64	176	x	54	1020	128	114	74	74	107	307	74	42
c Univ. of Iowa, Med. Dept....	360	459	117	303	306	24	743	166	x	282	612	114	36	180	12	108	144	24	x
c Detroit Medical College.....	448	480	224	288	258	64	752	240	x	208	640	128	32	32	32	64	32	96	x
c College of P. and S., Chicago.	420	540	245	270	225	45	750	150	x	390	555	120	150	120	60	60	180	60	30
s Vanderbilt Univ., Med. Dept..	286	728	130	156	260	104	720	104	26	156	468	156	26	78	52	104	312	26	26
c Harvard Univ., Med. Dept...	390	526	188	360	64	36	531	208	x	336	564	132	92	28	104	68	38	112	x
s Wisconsin College of P. and S.	540	354	270	180	165	15	465	132	45	330	347	120	75	45	195	180	180	90	54
c Univ. Med. Coll., Kansas City.	392	492	252	96	154	56	672	168	x	168	364	112	56	56	56	84	168	84	x
c Univ. of Buffalo, Med. Dept..	336	438	176	320	256	32	354	96	32	512	572	320	44	96	32	74	160	96	16
s Univ. of Louisville, Med. Dept.	468	524	260	338	260	78	518	104	52	x	332	208	78	26	104	104	156	52	52
s Georgetown Univ. Schl. of Med.	368	464	182	210	263	31	561	102	68	314	424	248	12	68	o	48	88	23	51
c Marion-Sims Medical College.	280	478	324	196	168	56	504	112	x	308	518	224	84	56	70	112	84	112	x
s Pulte Med. College, Cincinnati	216	468	114	184	252	112	690	72	o	240	606	188	56	28	56	84	56	70	42
s Univ. College of Med., Virginia	280	460	222	o	95	40	431	108	30	141	322	216	121	13	105	121	162	123	27
s Dartmouth Medical School...	366	441	204	309	246	o	444	54	o	203	262	224	o	o	87	54	181	o	24
c Denver and Gross Med. Coll..	288	262	192	232	224	o	532	112	x	224	596	196	64	64	32	64	96	28	x
s Columbian Univ., Med. Dept..	285	651	90	210	180	o	621	42	x	138	364	184	40	40	40	52	100	82	o
s Miami Medical College.....	652	454	70	168	56	o	356	96	30	212	428	168	64	74	o	142	88	64	x
s Ft. Worth Univ., Med. Dept..	312	490	172	104	182	104	282	146	26	136	208	208	104	156	104	o	52	52	14
c Keokuk Medical College.....	324	344	187	224	274	56	420	141	x	103	224	112	56	28	56	56	56	112	x
s Univ. of Penn., Med. Dept...	272	434	192	416	x	48	409	90	32	256	291	150	32	16	16	112	86	80	32
s Central Medical College.....	176	286	130	156	156	52	468	78	52	78	416	130	o	o	52	52	104	26	26
s Univ. of Virginia, Med. Dept.	209	200	125	170	105	70	235	25	o	155	495	145	10	15	25	22	60	25	11

TABLE 3.

RELATIVE TIME DEVOTED TO CLINICAL WORK IN THE FOLLOWING SCHOOLS.

NAME OF SCHOOL.	Hours.
Northwestern University, Medical Department	2,064
Cleveland College of Physicians and Surgeons	1,816
Johns Hopkins University, Medical Department	1,604
Western Pennsylvania University, Medical Department	1,440
Medico-Chirurgical College	1,360
Cooper Medical College	1,200
Western Reserve University, Medical Department	1,205
Colorado School of Medicine	1,094
Jefferson Medical College	1,072
Pulte Medical College	1,060
Harvard University, Medical Department	1,043
University of Texas, Medical Department	1,022
Hamline University, Medical Department	1,009
Cornell University, Medical Department	992
College of Physicians and Surgeons, San Francisco	966
College of Physicians and Surgeons, Chicago	960
Wisconsin College of Physicians and Surgeons	926
Georgetown University, Medical Department	916
Detroit College of Medicine and Surgery	896
University of Michigan, Medical Department	864
University and Bellevue Hospital Medical College	788
University of Iowa, Medical Department	786
University of Buffalo, Medical Department	758
Columbian University, Medical Department	750
University of California, Medical Department	666
Denver and Gross Medical College	644
Atlanta College of Physicians and Surgeons	598
Fort Worth University, Medical Department	572
Marion-Sims Medical College	560
Vanderbilt University, Medical Department	546
University of Pennsylvania, Medical Department	538
University of Louisville, Medical Department	534
University Medical College	532
Miami Medical College	524
University College of Medicine	510
St. Louis College of Physicians and Surgeons	447
Central Medical College, St. Joseph, Mo	338
University of Virginia, Medical Department	320
Dartmouth Medical College	230
Keokuk Medical College	*

* Can not determine.

The following is an average of the work done in the 43 colleges named. Deduct 10 per cent. and we have the course which is recommended:

TABLE 4.

	Average Course.	Proposed Standard.
Average total hours in 41 colleges in four-year course	4,095	3,600
Average total hours in 41 colleges in:		
First year	973	900
Second year	1,039	900
Third year	1,040	900
Fourth year	1,090	900
Average hours in 43 colleges devoted to the following subjects:		
Chemistry	375	340
Anatomy	549	500
Histology and embryology	219	200
Physiology	276	250
Pharmacology and therapeutics	118	110
Physical diagnosis	61	55
Surgery	596	540
Bacteriology	131	115
Etiology and hygiene	33	30
Pathology	295	260
Medicine	544	500
Obstetrics	177	150
Dermatology and syphilology	64	50
Laryngology and rhinology	67	55
Pediatrics	72	60
Ophthalmology and Otology	106	95
Gynecology	145	130
Neurology	82	75
Mental diseases and jurisprudence	27	25

Owing to the limited space and the cost of publication, 67 pages of statistics have been omitted.

BRITISH MEDICAL ASSOCIATION.

The Seventy-first Annual Meeting, held at Swansea, July 28, 1903.

(By our Special Representative.)

SWANSEA, WALES, July 31, 1903.

Swansea is a busy and picturesque town of about 94,000 inhabitants. It is the chief seat of the tin-plate trade of England, and is considered to be the most important copper smelting center in the world. This was the second visit of the association to Swansea, the former visit being about the middle of the last century, when the association was still young.

and the medical profession of Great Britain occupied a very different position from what it does now. The progress of the association has been extraordinary, its membership having increased from 1,500 at its first meeting in Swansea to no less than 19,000 at the present time.

Accommodations.

Although only 550 members approximately had registered up to noon of the third day of the meeting, at all of the leading hotels in the town the accommodation for visitors was taxed to the utmost. Owing to the scant accommodations some of the members and guests had to rough it. The small attendance was attributed in some measure to the inaccessibility of Swansea as a place of meeting.

Arrangements.

The arrangements made by the local committee for the reception of the visitors and for their interest and entertainment while in Swansea were admirable. There were receptions, garden parties, excursions, golf and cricket matches galore. There was sufficient variety of entertainment to please the most fastidious.

The meetings of the council, the general and representative meetings were so arranged as not to conflict with the scientific work of the association. The hours assigned for the meetings of all of the sections were from 11 a. m. to 1 p. m. each day.

The Church Service.

The members of the association attended the parish church on Tuesday morning attired in their academic robes. The congregation was very large and included the mayor and town clerk of Swansea and the new president and retiring president of the association. The Rev. Thomas Morris intoned the service, and the vicar, the Rev. Talbot Rice, read the lesson. The Bishop of St. David's preached from the text, "Christ Also Suffered." The bishop pointed to the appropriateness of the attitude of the association in thus seeking divine guidance and inspiration from the Great Physician, who had hallowed for all time the ministry of healing. After referring to the part that suffering played in the affairs of human life, the bishop said that the gratitude of mankind was deeply due to medical science for the discoveries made to reduce human suffering, but pointed to the fact that against the beneficent reduction of pain were to be set the glaring growth of social contrasts and the keener sensitiveness to suffering which attended the progress of modern civilization. It was, however, a healthy sign of the times that statesmanship now recognized more and more the agency of promoting the welfare of the people. In conclusion he reminded his hearers of the constant inspiration to be found in the recollection that Christ, who also suffered, ever associated Himself with suffering humanity.

The President's Address.

The president's address on the evolution of antiseptic surgery and its influence on the progress and advancement of bacteriology and therapeutics was interesting, brilliant and scholarly. He drew a striking picture of the wards and operating theater of a hospital at the time when he and many of his audience were students in the fifties and sixties; when wards were filled indiscriminately with disease and injuries of all kinds; when blood poisoning, erysipelas and suppuration were rife; when absorbent cotton wool was unknown, and the same sets of ward sponges were used for all cases alike. Under such circumstances the mortality of major operations was as high as 33 per cent., whereas now, he said, it is reduced to about 3 per cent., while that from minor operations is practically *nil*. This transformation was due to the evolution of surgery under the influence of Listerism.

The peroration of his entertaining address was unusually good. He said:

> The object of the British Medical Association is to secure concord and fraternity, unity and strength; power to organize and advance knowledge; power to protect our own interests and uphold the honor and noble traditions of the profession; power to promote and keep a jealous watch over the well-being of the community, and to educate them on all matters relating to health, both of mind and body; and, finally, power to influence and guide parliament in legislating for the health of the nation. The possibilities of the association are great; its influence, which is increasing year after year, will last as a living power in the country, and remain a valuable legacy for the benefit of posterity.
>
> Although our profession is not a lucrative one, it is honorable and heaven-born, and we may have the satisfaction of knowing that we are doing noble and Christian work in our effort to cure disease and alleviate human suffering. Moreover, we may claim that we live and labor to procure for the whole civilized world Nature's choicest blessing—health.

The addresses on medicine and surgery were likewise brilliant and scholarly, full abstracts of which will be given in THE JOURNAL.

The Sections.

Owing to the small registration the attendance in the various sections was slim. For instance, in the surgical section, during the reading of an important and interesting paper by Mr. Makins on intestinal anastomosis, there were only 45 present. Contrast this small number with the five or six hundred members in attendance on the Section on Surgery and Anatomy of the American Medical Association at New Orleans, and one will find food for reflection. Again, in the section on laryngology and otology, when no less an authority than Professor Glück of Berlin was demonstrating a case of laryngectomy, after presenting an exhaustive paper on this subject, there were only 25 present. There were only 35 members present in the section on obstetrics and gynecology when an interesting discussion was going on relative to fibroid tumors complicating pregnancy.

Discussions Not Reported Stenographically.

The discussions on papers read before the sections are not reported by shorthand writers, as is the custom at the annual sessions of the American Medical Association, but each discusser is furnished with a writing pad immediately at the close of his remarks by one of the secretaries. On each pad is printed the following: "Please write out your speech before leaving and hand it to the honorary secretary of the section. Please write name and number on each slip distinctly." As it takes considerable time to write out the remarks of a five or ten-minute speech, the secretaries are kept busy supplying the different speakers with writing pads and collecting them. Sometimes from four to six pads are in use at the same time. This method does not seem to curtail discussion in the least. The speakers willingly and cheerfully, apparently, write out what they have said; but there was a vast difference between the written speech and the spoken one, as we had occasion to observe by comparison. Interesting points that were brought out in the spoken speech were omitted from the written one. It is said that the British Medical Association has never tried to have its scientific discussions reported stenographically at these meetings on account of the great scarcity of competent medical stenographers in England, hence its adherence to the present method.

Excitement in the General Meeting.

The general meetings of the association, like those of the American Medical Association in former years under the old plan, are not as serene as they might be. Dr. E. W. Skerritt, Bristol, treasurer of the association, having submitted the financial statement, Dr. B. Bell, Glasgow, offered some piquant criticism thereon. He wanted more information as to how the money was spent. As it was, the members were asked to pass the accounts without knowing where the money went, and he said something should be done to remedy this unbusinesslike state of affairs. The *British Medical Journal* was conducting a large business, and the business ought to be conducted by business men and not merely by members of the council. He believed a great deal of money was spent that might be saved, and considered that the manner in which the journal was conducted was simple disgraceful. Apropos of the latter remark there were emphatic protestations and cries of "No, no." The speaker proceeded to move a set of resolutions aiming at reform, but was squelched with interruptions.

A representative defended the commercial ability of the members of the council. The accounts, he said, were published in detail in the journal, and if the members read the journal some of them would not have such extraordinary notions. Another member said he was instructed by his division not to

criticise the profit and loss account, but to ask for more details in the future.

The president regarded the questions raised by the members as childish, to which remark there was a chorus of very emphatic noes. The treasurer having replied to some of the points raised in a very satisfactory manner, the financial statement was adopted.

Absence of a Conspicuous Figure.

Last year, owing to ill health, Mr. Francis Fowke, after thirty-one years' faithful service as general secretary, tendered his resignation. This was accepted with general regret, and the association elected him an honorary member. During Mr. Fowke's term of office he guided the affairs of the association with conspicuous ability. When appointed he found the finances in a far from satisfactory condition, but by his close attention to every department he was able to change this condition of uncertainty to one of great stability. He watched the numbers of the association increase from about 5,000 to close on to 19,000, and helped to start branches in India, Australia, Canada, Africa and other parts of the British Empire beyond the seas.

The council has appointed Mr. Guy Elliston general secretary, who has been associated with Mr. Fowke for upward of three years. It is believed that he will prove a worthy successor in this important office.

Organizer Appointed.

The association, in recognizing the great importance of thoroughly organizing the medical profession throughout the British Empire, has appointed Mr. J. Smith Whitaker organizing secretary, to take charge of the business of the medico-political organizing and ethical committees.

(To be continued.)

ASSOCIATION OF AMERICAN MEDICAL COLLEGES.

Minutes of the Thirteenth Annual Meeting, held at New Orleans, May 4, 1903.

(Concluded from p. 386.)

For National Uniformity of Curricula.

Dr. Geo. M. Kober, Washington, moved that the special committee on by-laws, consisting of Drs. Ritchie, Dodson and Wathen, be continued, and that this committee be instructed to present some method at the next meeting for unifying the teaching in medical colleges.

Carried.

Appreciation of the President's Address.

Dr. J. W. Holland reported for the committee on president's address, as follows:

"We desire to express a very high appreciation of the valuable suggestions made by the president, and to recommend that a vote of thanks be extended to him by the Association. Further, that the address be printed, and that the suggestions contained therein, and which have not already been adopted, be referred to the committee on by-laws with a view to considering and presenting these matters at the proper time."

[Signed.] H. O. Walker.
J. W. Holland,
H. B. Ward.

On motion the report was accepted, and a vote of thanks extended to Dr. Rodman.

The Officers Elected.

The nominating committee then reported as follows: President, J. R. Guthrie, Dubuque, Ia.; first vice-president, Geo. M. Kober, Washington, D.C.; second vice-president, J. C. Oliver, Cincinnati; secretary-treasurer, Fred. C. Zapffe, 1764 Lexington street, Chicago; judicial council, John M. Dodson, Chicago; Randolph Winslow, Baltimore, H. B. Ward, Lincoln, Neb., J. W. Holland, Philadelphia. On motion the report was adopted, and the secretary instructed to cast the ballot, which he did.

Dr. P. Richard Taylor moved that the amendments as adopted be printed and mailed to the members of the Association within thirty days. Carried.

The suggestion in the secretary's report with reference to appointing a committee of three to assist the secretary in furthering the enrollment in the Association of colleges not now members of the Association, was referred to the committee on by-laws.

The Association then adjourned.

Wm. L. Rodman, President.
Winfield S. Hall, Secretary.

The following arguments were submitted, but on account of lack of time were read by title.

Symposium: To What Extent and How Rapidly Shall Our Standards of Admission to Medical Schools Be Advanced?

BY PARKS RITCHIE, DEAN COLLEGE OF MEDICINE AND SURGERY, UNIVERSITY OF MINNESOTA, MINNEAPOLIS.

The ostensible purpose in the organization of this Association was the advancement of medical education. We have met year after year and resolving ourselves into a mutual admiration society have enjoyed a pleasant social reunion. We have heard many admirable papers on the theory of higher medical education, and have indulged in delightful utopian dreams of the possibilities of the future ideal medical school. We have formulated rules for our guidance, and when a school has been convicted of flagrant violation, a *mild* reproof has been *firmly* administered!

Three years ago we made an apparent step forward, but by the wholly unauthorized and grossly unjustifiable action of the former secretary, and the chairman of the judicial council, the will of the Association was nullified.

The time has come for "the parting of the ways." Either we have fulfilled our mission and should disband, or we should take some action to justify our existence. Everyone must concede there is no crying demand for more practitioners. On the contrary, in the near future it must become a struggle for a bare livelihood.

The cheapness and ease with which a medical diploma may be secured is an invitation to ignorant and incompetent men to enter an already overcrowded profession. The number of cheap medical schools is appalling, and the unseemly strife for students in some localities is most disgraceful. What remedy offers for this unhappy situation? Consolidation of schools, which have demonstrated their fitness to survive, and the abandonment of the inferior grade, which have neither endowment, equipment nor ability.

This last proposition is humanly improbable of voluntary accomplishment. How shall the weak and consequently unworthy medical school be forced into bankruptcy and extinction? By the united efforts of the better grade of schools of this Association in an attempt to dignify the profession by limiting its membership to men with some degree of education, demonstrating that ours is not a mere trade to be taken up by any illiterate fellow who has the necessary funds.

Our entrance qualifications are absurdly low and wholly inadequate; and when we remember that these slight barriers are continually disregarded by members of this Association, the situation becomes intolerable. Any one of you who conducts correspondence with student applicants, knows this to be an indisputable fact.

In five or more states, the examining boards have increased the entrance demands to a degree which excludes the graduates of schools which admit students on our minimum requirements. This Association, which should be the pioneer and leader in this movement, is but a craven follower because it needs must!

If we raise our minimum demand to a high school entrance, the number of students will be greatly reduced. Is that a misfortune? Certainly not from a professional standpoint. Our revenue will be curtailed, but our power for good and our self respect will be exalted. If we move up as one man our united effort will compel endorsement. If we drift along in the futile fashion of the past few years, we lose our opportunity. If we obstruct the wheels of progress because some weak members may lose their doubtful patronage, we degrade ourselves and our vocation to the level of the tradesman.

If some good fellow and his "alleged" college are submerged in the rising tide, he may be considered an "offering" on the altar of higher education and enlightened progress, and ought to be proud of the opportunity to play the star part once. "Let us be up and doing." Now is the time and this the place to assume our station at the right of the column. Let us sternly enforce our rules, and expel unworthy schools which use this organization to advertise scientific wares which exist only in their prospectus. It will purify the air, advance our cause, and make a membership in this Association a badge of high endeavor.

BY SENECA EGBERT, DEAN OF THE MEDICO-CHIRURGICAL COLLEGE OF PHILADELPHIA.

In order that there may be no misunderstanding of the attitude of my colleagues and myself in regard to the question under discussion, I would very positively state that I believe that there should be some reasonable and, perhaps, considerable increase in our requirements for entrance into colleges belonging to this Association, not only because the rules and enactments of certain State Examining Boards and State Boards of Health practically compel us to make the change if we are to maintain the dignity and prestige of our Association in their opinion; but also and more especially because the exigencies of the time demand a higher standard.

But there are certain facts and conditions of which we must not lose sight, but all of which we must carefully consider if we are to solve our problem correctly and at the same time maintain the unity and harmony of the Association.

First, in undertaking to raise our standard, we must distinguish between that which is necessary as a preliminary education and that which is unnecessary but desirable, the latter including the knowledge, education and training of a Huxley, a Spencer or a Darwin.

Second, our change must not be too sudden nor too severe, else it will work injustice to many and thus may do more harm than good. No one can deny that conditions to-day are immeasurably superior to those existing at the time of organizing this Association, and we are in favor of a standard of preliminary education much higher than could have been required generally at that time. Let us then have faith that the coming years will justify and demand still greater advances from us, and the ultimate attainment of the ideal of any one here present.

Again, we must not forget that our standard must be elastic enough to apply to all parts of our country; at least, to all the territory covered by the respective schools of our membership; and sufficiently catholic to satisfy practically the essential requirements of any state board, two features that I believe are entirely compatible and easy of attainment. But to secure this we must have the manifestation of the spirit and not the fixation-and-vexation-of the letter in our law. In other words, we should ask of our entering students quality, not quantity, substance rather than time of preparation. We should not insist on diplomas when certificates from reputable and recognized instructors, or a fair and thorough examination by a duly authorized, competent and impartial educator can and does assure us that the candidate is reasonably well-prepared to take up and go on with the study of medicine. And we must remember that, from a pedagogical standpoint alone, the educator (using the word in a broad sense) of our students does not stop short when they enter our colleges, but that our own courses, as at present required by the demands and needs of the profession, are developmental in a high degree.

It is also worth recalling that the best preparatory schools of to-day are usurping part of the one-time work of the literary college, and that they may and do include in their set courses leading to the acquirement of their diplomas much that may come under the head of what is unnecessary in the preliminary education of a medical student.

Lastly, and with emphasis, I believe that it is far more important that this Association should be scrupulously fair to all its members than that it should raise its standard to the detriment of any considerable number of them, however much the latter may seem necessary. Colleges in affiliation with the so-called state universities have an advantage, that can not be gainsaid, over those institutions which are more or less dependent upon their own energies and private enterprise, and the representatives of the former should be broad-minded and generous enough not to use this advantage unduly or other than fairly to all concerned. This is the Association of American Medical Colleges—not of the colleges connected with state institutions—and our purpose of association is to advance the standard of medical education throughout the whole country. Can we afford then to do anything which causes the least suspicion that the organization has been used to further the interests of even one of its members against the others?

I am ready and willing to amend Article III of our constitution, but with all due respect to the committee, I think we can amend their amendment for the better.

BY C. E. M'CLUNG, DEAN, SCHOOL OF MEDICINE, UNIVERSITY OF KANSAS, LAWRENCE.

In a discussion of the entrance requirements to the medical schools of the country, due regard must be had to the difference between what is reasonably necessary and what is academically desirable. Local conditions must be met and plans laid to secure the best possible results under the greatest variety of conditions. What is really desired from the secondary schools are well trained students. More and more is it becoming evident that the best training is not always secured by forcing all students to pursue exactly the same course of study.

Medical schools would doubtless consider it desirable if students could come prepared in the modern languages, higher mathematics, and the elementary physical and biological sciences; but, is such a training necessary; or is it even possible in most of the secondary schools? I think few will insist that it is either.

What then is the minimum necessary for thorough work in the medical school? I should be inclined to say that a good four-year high school course is the least that will meet the requirements of the present medical curriculum. In such a course I feel sure that all would agree in making an absolute requirement in English and mathematics. Students well trained in these branches almost invariably prove good students.

Aside from these subjects, it would not seem wise to make a rigid requirement of the high schools. The committee proposing the amendment to the constitution has been wise in making provision to meet local sentiment and conditions by allowing the entrance requirements to the freshman class of the state university to serve as a fulfillment of the requirements of the medical school. These institutions register the possibilities of the high schools of their states. As a rule they demand all that it is possible to secure of the secondary schools. They are also finding it wise and prudent to take from the schools the work they are best prepared to give.

Reasonable objection can scarcely be made to the entrance requirements called for by the proposed amendment. It is certainly in the interests of both the public and the profession. A young man of average ability can finish the work of a four years' high school course at the age of eighteen, and be ready for the practice of his profession by the time he is twenty-two or three. He is then young enough to adapt himself to the conditions under which he will pursue his life work, and, at the same time, he has prepared himself measurably well in the subjects that will make him strong as a man. Surely the physician should be a man of high character and ideals, and a leader in his community. Such he probably will not be if he finishes his general education at the eighth grade, and then narrows down to the grind of his purely professional studies.

And why should not the medical schools demand adequate preliminary training of their students? There are plenty of high schools in the country to educate young men to the standard contemplated by the proposed amendment, so that there would be no lack of students, even were this selfish point

of view to be taken. No one can doubt that it would be to the advantage of the medical schools to have better trained students. If it be true then, as I think it is, that benefit would accrue to public, physician, and school by insisting on better preparation for medical work, certainly only a doubtful expediency would suggest contentment with anything less desirable.

BY HENRY S. TAYLOR, ALBANY, N. Y., REPRESENTING THE REGENTS OF THE UNIVERSITY OF NEW YORK (BY INVITATION.)

The topics of discussion before the Association of American Medical Colleges for this session are of keen interest to me. A feeling prevails that the increase of physicians in the United States is out of proportion to the increase in population. The accompanying table shows that in 1860 there was one physician to 576 people; in 1870 one to 617; in 1880 one to 585; in 1890 one to 598; and in 1900 one to 575. In 40 years the population increased nearly two and a half times, but the ratio of population to physicians is practically the same to-day as it was 40 years ago. But, as the number of physicians to the number of persons increased during the last decade more markedly than in any preceding decade, it is fair to assume that the requirements for admission to the practice of medicine should be increased if the general ratio of the 40 years is a proper one.

Table showing ratio of physicians to population as shown by the United States Census:

U. S.	1860.	1870.	1880.	1890.	1900.
Physicians	54,543	62,448	85,671	104,805	132,002
Population	31,443,321	38,558,371	50,155,783	62,622,250	75,994,575
Ratio ...	1 to 576	1 to 617	1 to 585	1 to 598	1 to 575

Assuming that it is safe to advance the requirements for admission to the practice of medicine throughout the United States, should this advancement be made in the general preliminary educational requirement for admission to the medical school, in the professional requirements for graduation, or in both? Without doubt, the new Article 3 strictly enforced will materially advance the preliminary requirements, and a uniform enforcement of the minimum requirements for admission to the medical schools that are members of this Association will materially reduce the numbers of the first class entering on these full requirements. For example, under Item B of Sec. 1, "The diploma of a state normal school having a course of instruction equivalent to a four-year high school course whose credits are accepted by a state university," if interpreted for Massachusetts, will cover a two-year course subsequent to a four-year high school preparation based on eight or nine years of pre-academic or grammar school preparation, which would not be recognized by Harvard for admission to her medical school; while the diploma from an Alabama state normal college secured on a two years' normal course, subsequent to two years of high school preparation, based on six years of pre-academic work, will admit to the junior year of the University of Alabama, i. e., 14 years of scholastic preparation in Massachusetts will not admit to the freshman year of the Massachusetts university, while 10 years in Alabama will admit to the third year of the Alabama university. Hence a uniform enforcement of this section, strictly interpreted, will very materially affect the entrance class to the medical schools of the country. This illustration plainly reveals perhaps the most pressing reform essential to the advancement of the medical profession in the United States to-day, viz., the need of a fixed standard for the measurement of the entrance requirements to professional schools.

The question of advancing the professional requirements is equally important. In the re-registration of medical schools necessitated by New York's advanced statutory requirements, the solution of several important problems leads to the conclusion that an accurate and equitable registration of the medical schools necessitates personal inspection, independent of professional bias. The best available authorities regarding medical schools in 1898 were the American Institute of Homeopathy, the Association of American Medical Colleges, the Illinois State Board of Health, the National Confederation of Eclectic Medical Colleges and the Southern Medical College Association. A member of the Institute who had served for years on the intercollegiate committee asked regarding the registration of two prominent homeopathic schools by the University of the state of New York. He thought the registration of one of them was a mistake, for that committee regarded it as one of their strongest schools. When he was shown a sworn statement that they made an allowance for admission to advanced standing contrary to the agreement of the committee, he acknowledged that the formal application for registration disclosed conditions not evidenced by annual publications.

The general preliminary educational requirement of the Illinois State Board of Health was plainly below the requirements of the New York statute; hence it became necessary to pass on the general preliminary educational qualification of a candidate for admission to the licensing examination independent of the professional requirement.

The rules of your organization permit an allowance of advanced standing to graduates of schools of dentistry, veterinary medicine, pharmacy, osteopathy, and the like, an allowance not permitted by the New York statute. This has led to the necessity of a distinction between registered and accredited schools, concerning which see the report of the director of the college department for 1902, p. r. 22-30.

The necessity of protecting the interests of students who desire to migrate from weaker to stronger medical schools, made it necessary to register the schools for admission to the licensing examinations independent of the registration for admission to other registered schools. The contention made at your last meeting regarding certain spring schools, that your rules compelled students to remain in such institutions, has some force. A spring school need not necessarily be an inferior school. The relation of receipts to expenditures, of instructors to matriculates, of library, laboratory and clinical facilities to the numbers graduating, are important factors in determining the standing of medical schools which should receive greater consideration than has ever been given them.

Finally, the allowance to be made graduates of colleges of liberal arts and sciences must receive careful attention. The independent colleges and medical schools suffer by the drifting of their students to the universities that can afford both lines of work and a combined course saving one or two years of time. The presidents of independent colleges plead for subjects they regard as essential in liberal culture, while the deans of the independent medical schools plead for these stronger students with the college training. All are agreed, however, that the matriculate possessing the baccalaureate degree, other things being equal, is better fitted for entrance on medical study than the graduate of the high school only. We hope that a satisfactory arrangement of a standardized combined baccalaureate and medical course can soon be adopted by the university that will prove satisfactory to the colleges, universities and medical schools of the State of New York.

Therapeutics.

[It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in every-day practice. Proper inquiries concerning general formulae and outlines of treatment are answered in these columns without allusion to inquirer.]

Phlegmasia Alba Dolens.

E. C. Hill, in *Med. Standard*, recommends in the treatment of phlebitis complicating the puerperal state, that absolute rest be given the affected limb in a felt-lined splint for 25 or 30 days; linimentum opii et belladonnæ be applied locally, followed by a covering of soft lint or oiled silk, care being observed not to blister. After the second week gentle inunction of mercurial or belladonna ointment should be employed. Later slight compression with bandage should be made. The limb should not be used freely until the fortieth day.

Suprarenal Extract in Diseases of the Skin.

M. F. Engman and W. P. Loth, in *Medicine*, recommends the employment of suprarenal extract in diseases of the skin accompanied by vasomotor disturbances. They regard it of no

benefit in those conditions of the skin attended with inflammation or exudation, such as acne and eczema. They report splendid results obtained in cases of general pruritus such as chronic urticaria, given in five-grain doses three times daily. They invariably use the dried, pulverized extract, gradually increasing the dose unless untoward symptoms are observed, such as nausea, dizziness, tremor, etc. In some cases an accumulative action has been noticed.

Mercury Hypodermically.

Lemoine, according to the *N. Y. and Phil. Med. Jour.*, recommends the following formulæ in the administration of mercury hypodermically:

℞. Hydrarg. benzoatis .....gr. ivss | 30
Sodii chloridi
Cocainæ benzoatis, āā.....gr. iii | 20
Aquæ destil. .....ʒi 30

M. Sig.: Thirty to sixty drops daily, injected hypodermically; or:

℞. Hydrarg. bichloridi .....gr. ivss | 30
Cocainæ hydrochlor.
Sodii chloridi, āā .....gr. iss | 09
Aquæ destil. .....ʒi 30

M. Sig.: Seven to fifteen minims daily; or:

℞. Hydrarg. biniodidi .....gr. 3/4 | 05
Atropinæ sulph.....gr. 3/40 | 005
Aquæ destil. .....ʒv 20

M. Sig.: Four to seven minims daily; or:

℞. Hydrarg. peptonatis .....gr. iiss | 15
Aquæ destil. .....ʒi 30

M. Sig.: Seven to fifteen drops daily.

Formaldehyd in Acute Tonsillitis.

A. C. Jordan, according to abstract in *Amer. Med.*, has obtained splendid results from the use of formaldehyd in the treatment of acute tonsillitis, aphthous stomatitis, diphtheritic and scarlatinal sore throat. He employs a 1 to 4 per cent. solution in glycerin. This application should be begun early in the disease. It causes some pain, which lasts for several hours, but the pain is not severe. He states that no food or water should be taken for an hour or so after the application in order that the antiseptic effects may not be disturbed. A gargle of potassium chlorate may be used later in the disease.

Dysmenorrhea.

Dr. F. C. Hammond, in an abstract in *Med. News*, states that the cause should be ascertained. However, there is a large class in which the cause can not be definitely worked out. He divides the treatment into:

1. The prevention of the attack.
2. The treatment of the attack.
3. The treatment between the attacks.

In cases in which there is congestion alone, he advises free purgation the day previous to the flow. According to the author the tincture of gelsemium is of great service in cases of dysmenorrhea occurring in girls and where there is a normal anatomic relation. He administers the tincture in ten-drop doses three times a day, beginning a week previous to the flow. He also recommends in such cases the use of apiol, cimicifuga and potassium permanganate.

In the treatment of the attack rest in bed is advised; hot vaginal or rectal douches and a hot-water bag over the abdomen. Antipyrin, cannabis indica, the bromids, caffein, sodium benzoate and viburnum prunifolium are indicated when the pains are of a neuralgic nature. He condemns the use of opium. Nitroglycerin will relieve the condition if the dysmenorrhea is due to vasomotor spasm; it may be given in one-hundredth-grain doses and repeated in an hour if necessary.

In the treatment between the attacks the general health must be cared for by proper exercise, tonics, baths, clothing and elimination.

Local treatment should be employed in order to reduce the congestion by the use of the tampon, antiseptic and astringent applications, vaginal douching, high rectal injections, pelvic massage, etc. In all cases where a pelvic lesion can be made out as the cause of the dysmenorrhea surgical measures should be resorted to in order to effect a cure.

In the neuralgic form of dysmenorrhea apiol may be used, according to *Merck's Archives*, combined as follows:

℞. Apiol .....ʒii 8
Acetanilidi .....gr. xl 2 | 65
Spts. chloroformi .....m. xxx 2
Alcoholis q. s. ad.....ʒii 60

M. Sig.: One teaspoonful in water every two or three hours.

Antipyrin may be employed likewise, combined as follows:

℞. Antipyrini
Sodii salicylatis, āā.....ʒi 4
Syr. aurantii q. s. ad .....ʒii 60

M. Sig.: One teaspoonful every hour or two until the pain is relieved.

Shoemaker employs the following combination containing apiolin in the treatment of dysmenorrhea:

℞. Apiolini .....m. l 3 | 30
Aloini .....gr. i | 06
Sulphuris sublim. .....gr. l 3 | 30

M. Ft. capsulæ No. x. Sig.: One capsule night and morning, one week previous to and during menstruation.

[Apiolin is a camphoraceous substance derived from the root of parsley. Apiol is an oily mixture containing volatile oil, resin and apiolin.]

The following combination is recommended by *Jour. de Med. de Paris* in the treatment of dysmenorrhea:

℞. Ext. cannabis indicæ
Ext. belladonnæ, āā .....gr. 1/4 | 015
Olei theobromæ q. s.

M. Ft. suppos. No. i. Sig.: One such to be introduced at night beginning five days previous to the usual time for menstruation.

The following containing camphor and hyoscyamus is frequently prescribed:

℞. Pulv. camphoræ .....gr. xii | 75
Pulv. opii et ipecac. .....gr. xx 1 | 30
Ext. hyoscyami .....gr. xii | 75

M. Ft. pilulæ No. xii. Sig.: One pill every two hours until the pain has ceased.

Coryza.

For the relief of coryza, accompanied by obstruction in the nares, Pregnut, in *Lyon Med.*, recommends the following:

℞. Cocainæ chloralis hydratis
Menthol, āā .....gr. v | 30
Olei petrolati .....ʒii 8

M. Sig.: Apply locally to the nasal mucous membrane.

Medicolegal.

Presumption as to When Compensation is Due.—The Fourth Appellate Division of the Supreme Court of New York holds, in the case of Bacon vs. Chapman, brought to recover for medical services, that, presumptively, compensation for the services was due immediately on their performance.

Admissibility of Memorandum of Dying Declarations.—The Supreme Court of Wyoming holds, in Foley vs. State, that a paper alleged to contain dying declarations was improperly admitted in evidence, where the statements were written down by one of the physicians in attendance, and the paper was signed and sworn to by him and the other physician and another party, but was not read over to the deceased, and was not signed by him. Under such circumstances, it says, the writing is a mere memorandum. It may be used to refresh the memory of the witness, but is not itself evidence of the declarations of the deceased. To make it admissible, it must have been read over to the deceased, and signed or assented to by him. If, however, the statements contained in the paper above mentioned were admissible as dying declarations, when presented to the jury by competent testimony, the court says that it is not prepared to say that the admission of the paper itself, though erroneous, was prejudicial to the accused or reversible error. The two physicians were present as witnesses, and testi-

fied that the writing contained substantially the dying declarations of the deceased. They were competent to testify to the declarations, refreshing their recollection by reference to the writing, and the error in admitting the paper was thus rather technical and formal than substantial or material. Furthermore, the court says that dying declarations are obnoxious to the objections which, according to the general rule, exclude hearsay testimony. But in view of the fact that in many cases there are no eyewitnesses to the murder except the slayer and the deceased, they are made an exception to the rule, and admitted on the ground of necessity. If they relate to former distinct matters, they do not come within the reason of the exception, and are not admitted.

Power of Court to Order Physical Examination of a Woman.—The personal injury case of Brown vs. the Chicago, Milwaukee & St. Paul Railway Company, the Supreme Court of North Dakota says, presented, for the first time in that jurisdiction, the question as to the court's power to require the party suing in a proper case to submit her person to a physical examination. Here the party suing alleged permanent injury to her uterus and bladder, also the fracture of the hip bone. The trial court took the ground that it was without power to make or enforce an order for the examination of her person by a physician; or that if it was in error on that point, and had such power in a proper case, yet in this case, in view of the party suing being a woman, and in view of the examination necessary under all the circumstances, still would it decline to make the order, for the reason that it would in this case be an ordeal to which she ought not to be subjected. But the Supreme Court holds that the court possessed the power in this case, and that it was an abuse of discretion to refuse to require the party suing to submit herself to the examination of physicians under such reasonable restrictions as the court should prescribe. It holds that in an action to recover damages for personal injuries alleged to be permanent, the trial court has power to require the injured party to submit her person to an examination of physicians or surgeons designated by the party sued, when, in the exercise of a sound judgment, it appears to the court that the necessity of the case demands such an examination. To permit the party suing and a physician of her selection, after examination of her person, to testify that her injury was permanent, and to deny the party sued the privilege of having the alleged injuries examined by competent surgeons to enable them to see from what, if any, injuries she suffered, their nature, extent and probable duration, was an abuse of discretion, and reversible error. The party suing in a personal injury case, by the commencement of her action, impliedly consents to the doing of that measure of justice which she exacts. She can not claim damages for injuries which she conceals from the reasonable inspection of witnesses when such inspection is necessary to equip them to testify on the trial concerning such injuries. She must, so far as in her power, enable the court, jury, and the adverse party to have the best evidence which can be produced in the case. It was no answer to the company's request for an examination that it would offend the modest and womanly instincts of the party suing to require her to submit to an examination of experts. She told a jury of 12 men of her pains; how and when they affected her. She submitted to a digital examination of her injured parts by two physicians of her own selection. It would have been no greater indignity to be examined by other doctors. Neither was it an answer that one physician had examined her and testified to what he found, and was cross-examined by the company. Surgeons of equal learning and honesty may not diagnose an injury in the same way. They may not be equally strong in perception, or equally accurate in observation or in measurements, and thus form different judgments of the existing conditions, which, of necessity, must constitute the basis of their scientific opinions. If a party sued must make his defense against the expert opinions of the chosen surgeons of the party suing, without the opportunity of testing the verity of the basis of such opinions, he may be placed at a disastrous disadvantage, such as the law can not and does not sanction. The company's right was, through an examination, to test the effect and reduce the weight of the evidence introduced by the party suing. The courts of Massachusetts, Texas, and Delaware, in following the Supreme Court of the United States in denying the power to require an examination, under penalty of a dismissal of the case for refusal to submit to same, did not notice the influence which the federal statute had on the determination of the question by that court.

Current Medical Literature.

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

Medical Record, New York.

August 1.

1 *Chronic Postdiphtheritic Laryngeal Stenosis as a Cause of Persistent Intubation of the Larynx. Henry W. Berg.
2 *Two Cases of Congenital Elevation of the Shoulder, with a Review of the Reported Cases. Russell A. Hibbs and H. Correll-Loewenstein.
3 Life and Its Physical Basis. Axel E. Gibson.
4 *A Signal Test for Color-Blindness. Percy Fridenberg.

1. **Chronic Postdiphtheritic Laryngeal Stenosis.**—Berg's article gives the causes of prolonged intubation, the effects of defective tubes (too large in the swelling, or roughened in surface) in causing necrosis or pressure sores, the dangers of such conditions and the occurrence of autoextubation. The prevention of these pressure sores forms an important part of the treatment and depends on the selection of the proper sort of tubes and care in the technic in intubation and extubation. When the case has developed into a tube case we should see whether the stenosis is due to pressure sores or decubitus with swelling, to decubitus followed by cicatricial contracture or decubitus with paralysis of the vocal cords, or a combination of these. If cicatricial stenosis is present, persistent intubation with a tube of just the right size to pass through the strictured larynx without difficulty, but not to be forced out, is most apt to be successful, and the intubation is not to be done too frequently. The use of astringent ointments on the tubes, the author thinks, is hardly necessary, from his experience. It may take months or years before the patient can get altogether along without the tube. Cases of paralysis of the vocal cords due to pressure on the recurrent laryngeal nerve without cicatricial stricture, are best treated by intubation with either a larger tube than is usual for the age of the patient, or one with an increased swelling; this should be nearer the neck of the tube than is usually the case. For atresia of the larynx, surgical treatment is the only method.

2. **Congenital Elevation of the Shoulder.**—Hibbs and Loewenstein report two cases, and classify the conditions thus: "1. With a bony bridge between the scapula and vertebral column; 2, with absolute absence of one or two muscles forming the shoulder girdle; 3, cases with a long and turned over supraspinous portion of the scapula; and 4, cases without bony overgrowth, the scapula normal or smaller, with shorter or otherwise defective muscles." They refer to published cases according to their classes, and discuss the etiology of the anomaly. In the first of the cases reported, the defect seemed to be due to a triangular piece of bone continuous with the scapula and articulating with a pivot joint to the seventh cervical vertebra, due to epiphyseal overgrowth of developmental origin, starting early in fetal life. The second class of cases is due to congenital lack of one or two muscles. The third class is due to the curved and possibly enlarged condition of the supraspinous portion of the scapula, which is accounted for according to the Sprengel theory as the outcome of intra-uterine pressure due to a lack of amniotic fluid. The fourth class of cases is of obscure origin, and represents conditions that have not been sufficiently studied. Probably some of them are not truly congenital. In the first and third classes, the only treatment is to resect the bony bridge or bent forward piece of bone; in the second class, orthopedic appliances to press the shoulder down and substitute the missing depressors where required. The fourth class will probably have to be treated orthopedically, by apparatus, massage, exercise, electricity, and, in selected cases, by the knife.

4. **Color-Blindness.**—Fridenberg notices the defects of the Holmgren test and its advantages if supplemented by a proper lantern test. He describes a lantern which he has devised.

The Boston Medical and Surgical Journal.

July 30.

5 The Sources, Favoring Conditions and Prophylaxis of Malaria in Temperate Climates, with Special Reference to Massachusetts. (Shattuck Lecture.) Theobald Smith.
6 *Problems of Clinical Anatomy. Thomas Dwight.
7 *The Need of a Supplementary Lantern Test for the Proper Examination of Color Perception. Charles H. Williams.
8 Efforts to Abate the Mosquito Nuisance in Brookline. H. Lincoln Chase.

6. **Problems of Clinical Anatomy.**—Dwight calls attention to the fact that all people are not made alike; that there are variations of structure often not recognized during life, knowledge of which would have helped the medical practitioner, and especially the surgeon. The results of certain series of observations are also, he thinks, establishing the law that certain pathologic conditions have their origin in some peculiarity of development. He calls attention to certain special points, such as the paralysis of the muscles of the larynx, in the symptomatology of aneurism of the right subclavian artery. Nevertheless, this may not occur, owing to a deviation of the artery which arises from the region of the aorta and passes behind the esophagus to its destination. Here the inferior laryngeal nerve is not recurrent. He expects to find this arrangement at least once a year in the dissecting room. Another is the peculiarity of the aorta in severe Pott's disease, where it lies, as it were, half coiled around the spine. Still another anomaly is the fusion of the atlas with the occiput, the existence of new bones and fusion of others, etc.

7. **Color-Blindness.**—Williams describes the lantern he has devised to test color vision supplementary to the Holmgren test, the defects of which he recognizes.

Medical News, New York.

August 1.

9 *Fetal, Congenital and Infantile Typhoid. John Lovett Morse.
10 *Some Cases of Prostatectomy, Observed After an Interval. Alexander B. Johnson.
11 Case of Bothriocephalus Latus in a Woman Immigrant, with Remarks on the Occurrence of this Parasite in America. William N. Berkeley.
12 Hernia. S. W. S. Toms.
13 Thiocol. J. Leffingwell Hatch.
14 *On the Presence of Specific Coagulins in the Tissues of Vertebrates and Evertebrates. Leo Loeb.
15 Pustulation and Its Accompanying Secondary Fever a Complication and Not an Essential Symptom of Smallpox. Jennie G. Drennan.

9. **Infantile Typhoid.**—See abstract in JOURNAL, vol. xl, April 11, 1903, p. 1018.

10. **Prostatectomy.**—Johnson operates by a perineal incision, with a second abdominal incision, the latter being utilized to afford access to the prevesical space, the fingers of the left hand inserted in this abdominal wound, making counter-pressure to the fingers of the right hand, working in the perineum. He makes a perineal incision, convexity forward, and, after separating the muscles surrounding the urethra from the anterior extremity of the sphincter ani, exposes the prostate by blunt dissection, using the sound in the urethra as a convenient guide. When the prostate is reached, it is pushed downward by the fingers of the left hand, into the perineum, and can generally be brought in sight. An incision is then made obliquely upward and outward through the capsule of each lateral lobe, and the enucleation accomplished by separating the capsule with the forefinger of the right hand. There is apt to be a tear of the urethra on one side or the other, and it is utilized for the drainage tube subsequently. He speaks particularly of the utility of the downward pressure from above in putting the prostatic plexus of veins on the stretch and thus preventing the bleeding. A suprapubic opening into the bladder is not advisable, and the infectious urine in the wound not at all advantageous. He reports cases observed at intervals of one or two years or more with good results; in all of them sexual power or desire has been diminished or lost.

14. **Specific Coagulins.**—Loeb found that the muscular tissues of various animals have a coagulating power on the blood of the same species. These coagulins are analogous to certain substances which are obtained through the process of immunization, namely, the agglutinins, precipitins, and lysins. The probability is not excluded that these coagulins may also act on other species, though less strongly. Each species of animal so far tested has specifically adapted means for preventing a dangerous loss of blood. The origin is probably of interest; it is not entirely explained by a selective process. The possibility of its being due to the lymph is excluded by the author as improbable, as a careful washing of the tissue does not diminish the influence of the tissue on coagulation, and he finds it can be definitely proven that the influence of a piece of muscle of a lobster is derived from the muscle itself.

American Medicine, Philadelphia.

August 1.

16 *Appendicitis as an Incident in Development. Woods Hutchinson.
17 *Bradycardia as a Symptom. Roland G. Curtin.
18 A Study in Astigmatism. Arthur G. Bennett and J. C. Clemesha.
19 *The Teaching of Personal Hygiene. Arthur L. Pyle.
20 *An Ideal Method for Drainage in Cholecystostomy. Alois B. Graham.
21 A Case of Metastasis of Mumps to the Brain. H. E. Wright.

16. **Appendicitis.**—Hutchinson considers that Ochsner's method of treating appendicitis is simply a return to Nature's methods in the case, and while he was first inclined to doubt, the observation of the practice of one of his surgical confrères has convinced him of its excellence. He describes the embryologic development of the appendix, and its occurrence in the lower animals. Of course, the operation for the removal of the appendix, in the interval, is advisable, but he thinks that Ochsner's plan to help Nature in walling off the inflammation is the correct one.

17. **Bradycardia.**—Curtin notices the effects of bradycardia and conditions in which it has been observed, pointing out that it is so common a symptom and occurs in so widely different diseases that it can be of only small diagnostic value. In a constitution not undermined by disease, and with a gradual subsidence, it need not be considered a grave symptom. On the other hand, if associated with or caused by a depressing chronic condition, especially of the cardiovascular system, it becomes a very serious symptom. When accompanied by anginose symptoms, it is frequently followed by sudden death.

19. **Hygiene.**—See abstract in THE JOURNAL, vol. xl, p. 1528.

20. **Drainage in Cholecystostomy.**—Graham describes the method of drainage of the gall bladder after cholecystostomy, devised by Dr. George J. Cook, which is performed as follows:

The drainage tube employed should be of large caliber and possess firm walls, so as to be not easily compressed. Its proximal end is firmly fixed in the gall bladder by a purse-string suture. Its distal end should not project more than one and one-half to two inches beyond the edges of the wound. To this end is firmly tied an extra large and extra thick condom or rubber sac. The gauze dressings are next applied; on these is placed the condom or rubber sac, and this is well surrounded and covered with cotton. All are retained in position by a binder bandage snugly adjusted. It can readily be seen that by this method we have produced an artificial gall bladder, and it lies in close proximity to the gall bladder which is to be drained. This so-called artificial gall bladder is removed once or twice every twenty-four hours, emptied, and thoroughly cleansed, after which it is again placed in position.

He claims for it the advantages of being ideal and complete, simple and easy of performance, cleanly, enables the patient to change position without assistance; the bile is collected in a pure state and can not become contaminated, and it enables one to study the influence of the so-called cholagogues on the bile secretion. It is so superior to Dr. Kehr's method that it is hardly comparable. His careful perusal of the literature, however, has failed to reveal previous mention of it.

New York Medical Journal.

August 1.

22 *Remarks on Medical Instruction; a Plea for Greater Uniformity. N. R. Coleman.
23 *The Psychical Relations of Tuberculosis in Fact and Fiction. G. A. De Santos Saxe.
24 *The Death Rate of Pneumonia. Thomas J. Mays.
25 *Dhoble Itch. Charles F. Mason.
26 Complete Removal of the Left Vocal Cord for Malignant Disease; Presentation of the Patient. Walter F. Chappell.
27 Chronic Lymphatic Leucemia Complicated by Pneumonia. T. Stuart Hart.

28 *An Improvised Method of Operating for Varicocele. Lucien Lofton.

22. **Medical Instruction.**—Coleman's address is in the line of his former address published in THE JOURNAL, vol. xl, p. 375, Feb. 7, 1903, but with more special reference to the medical curriculum.

23. **Tuberculosis.**—Saxe's article is to be continued. He reviews the characteristics of tuberculosis as given in literature, and in medical literature also, the consumptive type of insanity, the loss of self-control and increase of susceptibility to external mental influences, the variability of temper, and the alleged effect of the disease on the sexual instinct.

24. **Pneumonia.**—The alleged increase of mortality from pneumonia is noticed by Mays, who gives figures to show the ratio of deaths in various cities from pneumonia, tuberculosis and heart disease. He says:

In summing up the results of this investigation the following points seem to be fairly well established: First, there is no good reason for believing that pneumonia has gradually sprung into such prominence as to cause present or future alarm; for its highest death rate occurred before 1896, and since that time it has declined 21.17 per cent. Compared with heart diseases as a death menace, if such a term is permissible, pneumonia ranks rather low; for, in Chicago, the latter increased 350 per cent., and the former 450 per cent. in forty-two years. In the District of Columbia there is a marked decline in the pneumonia rate during the twenty-six years, while the deaths from heart disease increased 105 per cent. in the same time. In New Jersey, during twenty-three years, the deaths from pneumonia increased 30.95 per cent. and from heart diseases 55.55 per cent. In the composite chart the total increase of pneumonia deaths is not quite 10 per cent., while those from heart diseases increased 85.85 per cent.

Second, that in a number of the above-named localities the phthisis rate diminished from the beginning of the record; that there is a reduction in all of them in this respect from the early eighties to 1898, and that from the latter point of 1902 there is a general net increase. Thus, Philadelphia, St. Louis, the District of Columbia, Baltimore, Louisville, San Francisco and Rhode Island give a total increase of 117.17 per cent.; New York a decrease of 4.15 per cent., while Chicago, Buffalo, Richmond, Reading, New Jersey neither increase nor decrease, leaving, therefore, a net phthisical increase of 113.02 per cent. for the last five years, or between 1898 and 1902.

Third, that the natural average decrease in the death rate of phthisis is between 2 and 3 per cent. a year. This is shown in the composite chart, and in all the other charts in which a persistent decline occurred for a number of years in succession.

On the whole, we may, therefore, conclude that deaths from pneumonia are decreasing: that deaths from disease of the heart are increasing, and that deaths from phthisis decreased until five years ago, but have markedly increased since that time.

25. **Dhobie Itch.**—There are at least three types of infections known as dhobie itch, according to Mason; two of them mycotic, due to *Microsporon minutisimum* and the trichophyton, and one bacterial-pemphigus contagiosus. He says that the disease has been introduced into this country by soldiers returning from tropical service, and will probably become more prominent, especially where washing is not done by boiling. The prognosis will depend on the disease, whether mycotic or bacterial, and he describes pemphigus contagiosus, the treatment of which consists of thorough cleanliness of the parts and of the underclothes, with a twice daily sponging with a 1-1,000 solution of mercury bichlorid, followed when dry by a powder of equal parts of zinc oxid, boric acid and starch. If the mycotic dhobie is found, tincture of iodin, glacial acetic acid, 5 per cent. salicylic acid ointment, and 1 to 500 alcoholic solution of corrosive sublimate, would be effective in the order named.

28. **Varicocele.**—The method adopted by Lofton for this condition is the needling application of the ligation plan, and is described as follows:

The testicular case is prepared for action in the usual surgical manner. The patient is permitted to assume the semi-recumbent posture, when the scrotum is grasped with the left hand, the index finger and thumb separating the vas and the spermatic artery, i. e., placing them on the anterior border of the testicle, while the pampiniform plexus is brought well up against the anterior and upper walls of the bag, and held there firmly. With an ordinary curved surgeon's needle, three inches in length, armed with a double strand of No. 2 fiddle string, the pouch is pierced at the seat of election and the mass transfixed: the needle being curved at an angle of forty-five degrees, penetrates the opposite inner wall of the scrotum, but does not perforate it. With the point of the left index finger the needle is guided so as to slip along the inner wall of the bag, making a half circuit of the interior lining and over and above the transfixed veins, and is brought out at the original puncture and securely tied to the dangling ends of the external ligature. Caution must be observed in drawing the mass of veins well up against the inside anterior wall of the scrotum. This procedure, if it is thought necessary, may, at the same sitting, be duplicated from one to three times, at whatever points the surgeon's judgment may dictate. If you are sure you have separated the spermatic cord and artery from the general mass you may tie firmly at once; if not, gradual tightening is advised, as this will indicate the condition of affairs. The tying of the cord and artery with the veins is a mistake that some good men have made, but, with ordinary precaution, it should not occur. However, when this is done, great pain radiating from the lumbar region to the testicle on the affected side, and even on the penis, immediately sets in, and if not remedied, atrophy of the testicle will follow.

There is only one opening made in the scrotum and, when secondary inflammation sets in, the mass should be securely welded to the anterior walls. The patient can continue at his business without interruption. He has not had any severe inflammation or pain follow the procedure or any elevation of temperature in his cases. A well-fitting suspensory, of course, is advised for some weeks, and the bowels and kidneys should be in a healthy condition. Recovery follows on an average in from twenty-five to thirty days, and complete atrophy of the veins in about six months.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal, London.

July 25.

1 *Remarks on Ectopic Gestation and the Conditions Favorable for Its Advance to the Full term. John Ward Cousins.
2 A Case of Puerperal Eclampsia. Robert McDowell. With remarks by Professor Byers.
3 *On Influenzal Orchitis, with Three Cases. R. Clement Lucas.
4 The Causes of Acute Abdominal Pain in the Healthy, Exclusive of Traumatism. J. Lynn Thomas.
5 Hernia of the Bladder as a Complication of Inguinal Hernia. G. B. Ferguson.
6 Further Observations on Alcoholic and Arsenical Neuritis. Ernest Septimus Reynolds.
7 A Case of Ankylostomiasis in Scotland. Ralph Stockman.
8 *Treatment of Atrophic Retina with Retinal Extract. Robert W. Doyne.
9 Two Cases of Fracture of the Base of the Skull, Which Recovered After Venesection. Stephen Paget.
10 The Buried Unabsorbable Ligature and Its Sequelæ. C. Hamilton Whiteford.
11 The Treatment of Hydrocele by the Method of Seton. A. A. Scot Skirving.

1. **Ectopic Gestation.**—The conditions favorable for carriage of the fetus to full term in ectopic gestation, are given by Cousins, as, first, early continuous mobility of the ovum; second, slow subperitoneal expansion of the sac; third, absence of urgent symptoms indicating intraperitoneal or extraperitoneal rupture; fourth, the early ascent of the fetus toward the abdominal cavity; and fifth, the lateral position of the placenta in relation to the gestation sac and its upward expansion and elongation. He discusses the etiology of ectopic gestation. He thinks that while there are many unsettled points, the following conditions may be taken as a basis for further investigation: first, the fertilization of the ovum sometimes occurs within a tube in which the lumen has been distorted by chronic changes within or around it; second, that in addition to some form of mechanical obstruction, the tubal mucosa may be changed under genetic influence into decidual tissue, and that this structural change is necessary for the vital attachment of the embryo.

3. **Influenzal Orchitis.**—From cases he reports, Lucas assumes that often the inflammation of the testis may follow influenza close on the fever; that after one is recovered, the other may be attacked; second, that when there is an epidemic of influenza in the neighborhood, sporadic cases probably occur as the result of the influenzal germ, though the direct connection may be difficult to trace.

8. **Atrophia Retinae.**—Doyne has experimented with retinal extract in cases of retinal atrophy, on the theory of charging the blood more richly with the retinal constituents, and thus compensating for a lack of the usual nutrition. His results have been such as make him conclude that there is a certain amount of benefit in this treatment in cases of retinal, but not optic nerve, atrophy.

The Lancet, London.

July 25.

12 *Some Improvements in the Method of Local Analgesia: Clinical Remarks. Arthur E. J. Barker.
13 *Causes, Prevalence and Control of Pulmonary Tuberculosis (Milroy Lectures.) H. Timbrell Bulstrode.

14 *An Inquiry Into the Susceptibility of Criminals to Atmospheric Changes. W. Norwood East.
15 Roentgen Rays in the Diagnosis of Lung Disease. David Lawson and R. Hill Crombie.
16 Some Further Improvements in the Procedures for Testing and Judging by the Naked Eye of the Agglutinating and Bacteriolytic Effects Exerted by the Sera of Patients Suffering from, or Preventively Inoculated Against, Typhoid Fever, Malta Fever and Tuberculous Affections. A. E. Wright.
17 Observations on Mastication. Harry Campbell.
18 The Conservative Treatment of Lesions of the Uterine Appendages. George Granville Bantock.
19 Have the Locality and Surroundings an Influence on the Recurrence of Malignant Disease After Operation? D'Arcy Power.
20 Hepatectomy for the Removal of Riedel's Lobe. Charles Barrett Lockwood.
21 Enzymes in Tumors. Arthur Harden and Allan MacFadyen.
22 The New Royal Victoria Hospital, Belfast. Prof. J. W. Byers.

12. **Local Analgesia.**—The difficulty of applying in practice the discovery of Corning, that a local anesthetic introduced to any part of the nerve trunk would abolish its sensation to its minutest termination, is first noted. Barker was led by this to adopt the principle laid down by Braun of Leipsic, that anything that retards or diminishes the circulation of the blood in the part, enhances the power of the analgesic agent, and followed Braun's suggestion of investigating further whether the diminution produced by the injection of adrenalin would not also have this effect. His results were good. He gives the proportions which he used; two grains B-eucain with ten grains of chlorid of sodium, added to 100 cubic centimeters of boiling distilled water, then a cubic centimeter of solution of adrenalin was added when the fluid had cooled. The difficulty of keeping the solution of adrenalin perfect, is mentioned, and he suggests that this preparation be put up in thin glass capsules like those of nitrite of amyl, which can be broken at the time needed. He has operated by this method in a number of cases of hernia and tumor extraction, varicose veins, skin grafting, abscesses, etc., and considers the success of the local anesthesia thus applied very marked.

13. **Pulmonary Tuberculosis.**—Bulstrode gives here in tabulated statement the statistics of tuberculosis in various countries and cities, Prussia, France, Denmark, Switzerland, etc., showing that in all, except it may be in France, a very marked diminution in the phthisis mortality.

14. **The Susceptibility of Criminals to Atmospheric Changes.**—East, a medical officer of the convict prison at Portland, has studied the effect of atmospheric changes in criminals under his charge. Normal individuals are markedly affected by atmospheric changes, but he finds that criminals are practically insensible to their influence. The facts seem to confirm the view that criminals are less susceptible to external impressions than are normal individuals.

Revue Medicale du Canada, Montreal.

23 (VI, 38.) La transmission des maladies par les sièges des latrines (by water closet seats). M. T. Brennan.
24 (No. 45.) De l'inflammation et de son traitement. J. P. Rottot. (Concluded.)
25 (No. 47.) Certain Drawbacks of Rectal Injections. M. T. Brennan.—Certains méfaits des lavements en chirurgie abdominale et en gynécologie.
26 (No. 48.) Quelques usages de l'acide picrique. Ibid.
27 (No. 51.) *Epilepsie menstruelle traitée par la transplantation ovarienne. Ibid.

27. **Operation for Epilepsy with Transplantation of Part of the Ovaries.**—Brennan operated last November on a young woman of 19 who had suffered from epileptic seizures since her first menstruation at 8 years of age. They recurred sometimes as often as three a day, and usually about six to fourteen a month, but seemed to be restricted to the menstrual period. No clinical lesion could be discovered, and the family history was good, the patient living in a Vermont town in easy circumstances. After failure of all other measures and loss of 40 pounds in weight during the last few months, Brennan removed both ovaries. A piece of the left ovary the size of a bean was transplanted in the fundus of the uterus. There was a very severe seizure the next day, but that was the last, and to date, June, 1903, there has been no recurrence nor any symptoms that might be attributed to the artificial menopause, except that after exceptional fatigue, on five or six occasions, there has been a slight nervous crisis.

Archiv f. Allg. Pathologie, Etc. (Virchow's), Berlin.

28 (CLXXIII, 1.) Osteogenesis imperfecta. F. Michel (Marburg).
29 Biologic Study of Blood in Arthropoda. L. Loeb (Montreal).—Ueber die Bedeutung der Blut-Körperchen für die Blut-Gerinnung und die Entzündung einiger Arthropoden und über mechanische Einwirkungen auf das Protoplasma dieser Zellen.
30 Anatomische Untersuchungen zur Frage der beginnenden Prostata-Hypertrophie. A. Rothschild (Berlin).
31 Adenomyome des Pylorus. E. Magnus-Alsleben (Strasburg).
32 Three Remarkable Tumors in or on the Stomach. F. Mlodowski (Breslau).—Drei bemerk. Tumoren im und am Magen.
33 Postmortal Changes in Pupils. Placzek (Berlin).—Ueber Pupillenveränderungen nach dem Tode.
34 Fatal Hemorrhage from Arrosion of Renal Vein from Chronic Gastric Ulcer. H. Merkel (Erlangen).—Fall von chron. Magengeschwür mit tödlicher Blutung aus der arrodierten linken Nierenvene.

Archiv f. Klin. Chirurgie, Berlin.

Last indexed XL, page 131.

35 (LXIX, Nos. 1-2. Esmarch Festschrift.) *Zur radikalen Behandlung der Darm-Invagination. von Eiselsberg.
36 *Surgical Experiences with Carcinomata of Intestines. J. v. Mikulicz.—Chir. Erfahrungen über das Darmcarcinom.
37 Osteotomie und Osteoklase bei rhachitischen Deformitäten der unteren Extremität. T. Kölliker.
38 Ueber die Entstehung und Behandlung des Hohlfusses (talipes cavus). L. Heusner.
39 Zum Mechanismus des Plattfusses (flat foot). F. Petersen.
40 *Treatment of Cavities in Tibia. F. v. Mangoldt.—Zur Behandlung der Knöchenhöhlen in der Tibia.
41 Arthrodesis of Flail Joint in Shoulder. O. Vulpius.—Ueber die Arthrodese des paralytischen Schlottergelenks der Schulter.
42 Origin and Treatment of Spondylitic Paralysis. H. Tillmanns.—Ueber die Entstehung und Behandlung der spondylitischen Lähmungen.
43 Fractures of Femur. R. Klapp.—Zur Behandlung der Oberschenkelbrüche.
44 Histologische Knochenuntersuchungen bei tabische Arthropathie. Barth.
45 Secondary Incision of Thorax. C. Beck (New York).—Exploratives Prinzip und Technik bei sekundärem Brustschnitt.
46 Symmetric Lachrymal and Salivary Affections. H. Haeckel.—Zur Kenntniss der symmetrischen Erkrankung der Thränen- und Mundspeicheldrüse.
47 *Zur Kenntnis der Pustula maligna. R. Hoelscher.
48 Klinische Mitteilungen. R. Fischer (Berlin).
49 *Ueber Carcinom-Entwickelung. De Ruyter.
50 Die Rhinoplastik aus dem Arm. H. Waitz.
51 *Die Behandlung septischer Erkrankungen mit intravenösen Collargol (Arg. coll.) Injektionen. Credé.
52 *Die Hepatikus-Drainage. Berger (Kehr's clinic, Halberstadt).
53 Weiterer Beitrag zur diagnostischen Bedeutung der Leukocytose bei Appendizitis. M. Wassermann.
54 Klinische Mitteilungen. H. Schüssler (Bremen).
55 Die Elastizität der Muskeln und ihre chirurgische Bedeutung. Tilmann.
56 *Ueber die Winkelmann'sche Hydrocelen-Operation. F. Klaussner.
57 *Present Status of Surgery of Pharynx, Larynx and Trachea. Gluck (Berlin).—Der gegenwartige Stand der Chirurgie des Schlundes, Kehlkopfes und der Trachea.
58 Syphilitic Inflammation of Striated Muscles. Busse.—Ueber syph. Entzündung der quergestreiften Muskeln.
59 Notes in Orthopedic Practice. Hoeftmann.—Mitteilungen aus der Praxis.
60 Zur Kasuistik des arteriell-venösen traumatischen Aneurysma. E. v. Bergmann.
61 Ueber primäre akute Typhilitis. Jordan.
62 *Influence of Vitality of Tissues on Local and General Toxic Action of Local Anesthetics and the Importance of Adrenalin for Local Anesthesia. H. Braun.—Ueber den Einfluss der Vitalität der Gewebe auf die örtlichen und allg. Giftwirkungen lokal anesthesierender Mittel, etc.
63 Exposure of Hip Joint by Larghi Curved Incision. A. v. Bergmann.—Zur Freilegung des Hüftgelenks durch den Larghi'schen Bogenschnitt.
64 Ueber die Operation der Cholecystitis acuta infectiosa im akuten Stadium. W. Körte.

35. **Radical Treatment of Invagination of Intestines.**—Eiselsberg's experience includes 13 cases of invagination, 3 acute, 3 subacute and 7 chronic. The cause of the invagination was polyposis in 3 cases and a cicatrix or neoplasm in 4, while in 6 there was merely an abnormally long mesentery. He advises cautious attempts to reduce the invagination in order to determine how large a part of the intestine is involved. In acute cases or in much debilitated subjects the intervention should be restricted to this alone. Under other circumstances he advocates total resection to prevent recurrence. He succeeded in reducing the invagination in 5 cases and partially in 3 out of 12 in which he attempted it, and 9 of the 12 in which he performed total resection have been definitely cured. He absolutely rejects enteroanastomosis for this purpose, as also an artificial anus.

36. **Carcinomata of Intestines.**—Mikulicz's article is scarcely adapted for an abstract, as he reviews his extensive experience in detail.

40. **Treatment of Cavities in the Tibia.**—Mangoldt has found that a cavity in the tibia gradually becomes smaller and finally becomes entirely obliterated when it is lined with a flap of skin and periosteum. Small cavities can thus be lined with a tongue-shaped flap with a broad base fitted into the cleaned and leveled cavity, but larger ones require a flap of skin and periosteum drawn down from the margin of the wound after undermining it enough. A rapid and durable covering for a large cavity can be obtained with Thiersch flaps or Mangoldt's method of sowing epithelium. Cavities in the epiphysis may be lined with a turned-over flap of skin and periosteum. The cavities lined with transplanted flaps heal perfectly, but do not grow smaller as occurs with the pedunculated flaps. He describes a dozen cases in detail. In 2 the cavity became spontaneously obliterated after it had been lined with a pedunculated flap of periosteum taken from under the skin.

47. **Pustula Maligna.**—Hoelscher found pure cultures of staphylococci in 2 out of 7 cases of pustula maligna. All the patients recovered.

49. **Development of Carcinoma on Inflammatory Processes.**—De Ruyter reports a case of two carcinomata developing on the nasal mucous membrane consecutive to an old empyema of the antrum of Highmore. In a second case the carcinoma developed in an inflamed and cystically degenerated mamma, and in the third on the basis of an old perityphlitis.

51. **Collargol in Septic Processes.**—Credé reiterates his recommendation of collargol for all septic processes. In mild or moderately severe cases it can be used in inunctions, but in the severe and urgent it should be applied from the start in intravenous injections.

52. **Draining of the Hepatic Duct.**—Kehr's views have been presented in THE JOURNAL from time to time, and his address at Washington on this subject was summarized on page 1598 of the last volume. This article is a detailed statement of the technic, operations and results at his clinic, a total of 25 cases of cholelithiasis treated by drainage of the biliary passages.

56. **Winkelmann's Operation for Hydrocele.**—Klaussner has collected 104 cases of hydrocele in the literature treated by Winkelmann's operation. There has been recurrence in 2 out of this number. He has performed the operation himself in 35 cases, and recommends it for all uncomplicated ones in which the tunica vaginalis is not too rigid to be turned over in this way.

57. **Surgery of Larynx, Trachea, Etc.**—Gluck has been a pioneer in the extirpation of the larynx and pharynx, and his results have been very fine. He describes in detail his technic, apparatus for closing fistulæ, for improving phonation and for substituting parts of the defects in these organs. Only one has died out of his 22 patients whose larynx he has extirpated.

62. **Influence of Vitality of Tissues on Toxic Action of Local Anesthetics.**—Braun's experiments and conclusions are along lines almost identical with those of Barker, No. 12 above. Barker refers to Braun.

Janus, Amsterdam.

Last indexed page 403.

65 (No. 4.) **The First Russian M.D.** L. Stieda.—Der erste russische Doctor der Medicin. P. W. Postnikow.
66 **Library Demonstrations in the Teaching of the History of Medicine.** J. Finlayson (Glasgow).
67 **The Tercentenary of the Faculty of Physicians and Surgeons, Glasgow.** Ibid.
68 **Rôle of Physicians in Annals of History.** P. Fabre (Commentry).—Les medecins annalistes. (Concluded.)
69 La peste à Delft en 1557-1558 et en 1573. L. Meunier.
70 (No. 5.) *Qu'est ce que signifie "la modorra"? H. F. A. Peypers.
71 *Attempt at Identification of the Medicinal Plants Mentioned by Dioscorides. (From the drawings on a manuscript in the Paris Library.) E. Bonnet (Paris).—Essai d'identification, etc. (Concluded.)
72 Salomo Levy Steinheim. J. Pagel. (Concluded.)
73 (No. 6.) *On Indications of the Haschish Vice in the Old Testament. C. Creighton (London). (Concluded).
74 Records of Strasburg Midwives' Training School. R. Landau. Eine Urkunde der Str. Hebammenlehranstalt.

70. **"Modorra."**—Peypers has been comparing the historic accounts of the epidemics of "modorra" in the Canary Islands in 1494, and the two later centuries. He thinks that the word was used to express bubonic plague and not sleeping sickness, as some have recently asserted.

71. **Attempt at Identification of the Medicinal Plants Mentioned by Dioscorides.**—Bonnet reproduces some of the drawings on the ancient Greek MS. and establishes the identity of a large number of the plants whose medicinal virtues are described. Some of the drawings are reproduced.

73. **Indications of the Haschish-Vice in the Old Testament.**—Creighton gives a new rendering of certain words in the Old Testament, endeavoring to prove that the disreputable intoxicant drug of the east, haschish, was known and used then, and that the vice was recognized as such and attempts at regulation made. It did not come under the head of a drink but of food, and he argues to prove that it was the secret of Jonathan's and Samson's strength and of Saul's madness. Samson's "strength" collapses, just as Saul's "courage" fails, the stimulant having lost its power, and being followed by hebetude. Creighton thinks that the "grass" on which Nebuchadnezzar fed was this same drug. He was in fact first interested in the subject by noting the similarity between the ordinary Arabic word for grass, hachach, and haschish, the term for Indian hemp. He concludes by suggesting that the first chapter of Ezekiel, with its phantasmagoria of composite creatures, wheels, and of brilliant play of colors is unintelligible from any point of view except that of the subjective visual perceptions induced by haschish. He adds that this chapter caused long hesitation before the book of Ezekiel was included in the accepted text of the Bible. The article is in English.

Riforma Medica (Palermo).

Last indexed page 346.

75 (XIX, 19.) *Study of Abscess of Spleen. A. Cipollina.—Contributo allo studio dell'ascesso della milza.
76 *Hypochloruria in Pneumonia. A. Santini (Siena).—Sulla ipocloruria nella polmonite e sulla presenza del cloro organico nei tessuto. (Commenced in No. 18.)
77 (No. 20.) *Treatment of Hydatid Cysts in Liver with Sublimate. D. Pirrone.—La cura delle cisti di echinococci del fegato col metodo Baccelli.
78 Attempts at Chemical Anti-anthrax Vaccination. A. Paladino-Blandini.—Tentativi di vaccinazione chimica anti-carbonchiosa.
79 A proposito di una diagnosi di tumore addominale. G. Zagari.
80 (No. 21.) Bile Pigments in Icterus. L. Ferrannini.—Le proprietà e le trasformazioni dei pigmenti biliari nelle varie forme di ittero.
81 Gastric Functions in Splenectomized Animals. T. Silvestri.—La funzionalità gastrica negli animali smilzati.

75. **Spleen Abscess.**—The diagnosis is assured if a fluctuating tumor can be palpated under the costal arch, especially if accompanied by pyemic fever and local pains. To relieve the pain in the spleen the patients may assume a characteristic attitude, lying on the back with the left thigh flexed. The prognosis is grave, although recovery has followed prompt surgical intervention in some cases. In the typical one described the abscess was of tuberculous origin, as also the peribronchial and mesenteric glandular lesions. Less than a dozen cases are on record of abscess of the spleen, and only 3 recovered. Some were consecutive to typhoid or malaria, and one to articular rheumatism. Four of the patients were women.

76. **Retention of the Chlorids in Pneumonia.**—Santini called attention in 1902 to the hypochloruria observed in the course of pneumonia and has since established that it is a constant phenomenon in all acute infections. (The diagnostic importance of the retention of chlorids has recently been emphatically proclaimed from Senator's clinic, as quoted at length on page 140 of THE JOURNAL.) In a patient under observation for some time on account of mitral stenosis, the elimination of chlorids was constantly 8 to 10 gm. a day. An attack of pneumonia supervened, and the first day the chlorids were 9.41 gm., and the next, only 1.17 gm. In another patient the onset of an acute infection caused the chlorids to drop from 14.47 gm. the day before to 6.81 gm. the first, and 2.19 gm. the second day. In another patient two attacks of pneumonia occurred while under observation, and in both the same sudden drop in the chlorids was noted in twenty-four to forty-eight hours. From the clinical study of 50 patients with pneumonia he states that

this constant hypochloruria ranges from a daily minimum of .5 gm. to 6-7 gm., but does not seem to bear any relation to the extent of the pneumonic focus, nor the height of the fever. When salt is ingested by normal subjects the proportion eliminated in excess approximates the amount ingested, but this does not occur in case of hypochloruria. Even when a pneumonia patient took as much as 24 gm. of salt during the day, the percentage in the urine was only slightly increased, not at all in proportion to the quantity ingested. Santini concludes from his experiments and the arguments he presents that the quotient of the alkaline-mineral chlorid remains invariable in the tissues in pneumonia as in health, or may be a trifle lower in the former. During the infectious process the chlorin enters into combination with organic substances abnormally produced, and the product is impermeable for the kidneys. Even in physiologic conditions, while a constant proportion of the chlorin is found in the tissues in the form of an alkaline-mineral chlorid, another part is found in combination with organic principles. The retained chlorin can be readily found in the desiccated blood and tissues by mixing them with a 2.5 per cent. solution of caustic soda and setting aside for a time, occasionally shaking the vessel, then proceeding as usual for its determination.

77. **Treatment of Echinococcus Cysts in Liver with Injections of Sublimate.**—Pirrone gives the particulars of 3 cases of an echinococcus cyst in the liver completely and rapidly cured by aspiration of a small portion—about 10 c.c.—of the contents of the cyst, and injection through the needle before its removal of a smaller amount of a 1 per cent. solution of sublimate—about 2 c.c.—repeating the procedure in a week. Exploratory puncture and aspiration a month later were entirely negative, and the experiences in these cases have been duplicated in a large number of others. The conditions for success are that the contents of the cyst are sterile, that the cavity is single, that the lesion has not lasted so long that the walls of the cyst have become rigid and thus unable to retract, and lastly, that the cavity is not too extensive. It is important to apply a constricting bandage around the abdomen below the liver before making the puncture, and afterward to place an ice bag over the liver for twenty-four hours, withhold food for eighteen hours at least, and keep the patient immovable on his back in bed. The death of the parasites is indicated by leucocytosis in the fluid obtained by puncture and the presence of numerous hooks which become detached from the wall. The fluid first aspirated contains few, if any, of these hooklets. The liver is usually hypertrophied to compensate for the loss of the portion invaded by the cyst, and although not degenerated elsewhere, yet the organ generally remains enlarged after recovery. Pirrone styles this Baccelli method of treating echinococcus cysts "a positive and important conquest in the field of therapeutics." By removing only a small amount of the contents of the cyst the dangers from abrupt changes in pressure are avoided, and Nature attends to the gradual and safe absorption of the remainder as soon as the parasites are killed by the sublimate injection. The reaction is slight, possibly a little pain in the corresponding shoulder, and slight fever the day after the injection, not more than 38.5 C. The symptoms then all gradually subside.

The Public Service.

Army Changes.

Movements of Officers of the Medical Department, U. S. A., under orders from the Adjutant-General's Office, Washington, D. C., for the week ending Saturday, July 25, 1903:

Daywalt, George W., contract surgeon, is relieved from further duty at Fort Schuyler and from temporary duty at Fort Levett, and will proceed to Fort St. Philip for duty, to relieve Contract Surgeon Frederick Hadra, who will proceed to his home, San Antonio, Texas, for annulment of contract.

Gregory, Verdo B., contract surgeon, now at Vancouver Barracks, is relieved from further duty in the Department of the Columbia, and will proceed to his home, Bowers, Wis., for annulment of contract.

McCulloch, Jr., Champe C., captain and asst.-surgeon, is granted leave for ten days.

Roberts, William, first lieut. and asst.-surgeon, is relieved from treatment at the Army and Navy General Hospital, Hot Springs, Ark., and will return to his station at Fort Brady.

Reno, William W., first lieut. and asst.-surgeon, now at San Francisco, is relieved from further duty in the Division of the Philippines, and will proceed to Fort Crook for duty.

Winter, Francis A., captain and asst.-surgeon, is granted an extension of leave for twenty days.

Navy Changes.

Changes in the Medical Corps of the U. S. Navy for the week ending Aug. 1, 1903:

Medical Director M. H. Simons, commissioned medical director from June 9, 1903.

Drs. S. L. Scott, T. N. Pease and F. G. Abeken, appointed assistant surgeons from July 10, 1903.

Hospital Steward E. May, appointed pharmacist from March 28, 1903.

Hospital Steward T. N. Phillips, appointed pharmacist from June 8, 1903.

P. A. Surgeons E. M. Blackwell and G. F. Freeman, commissioned as such from June 7, 1903.

Asst.-Surgeon C. E. Ryder, ordered to the Naval Hospital, Chelsea, Mass.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon-General, Public Health and Marine-Hospital Service, during the week ended Aug. 1, 1903:

SMALLPOX—UNITED STATES.

Alabama: Mobile, June 18-25, 4 cases.
California: Los Angeles, July 11-18, 1 case; San Francisco, July 12-19, 5 cases.
Illinois: Belleville, July 11-25, 3 cases; Chicago, July 15-25, 1 case, 1 death.
Indiana: Indianapolis, July 18-25, 1 death; South Bend, July 18-25, 1 case.
Louisiana: New Orleans, July 18-25, 3 cases.
Massachusetts: Fall River, July 18-25, 7 cases.
Michigan: Detroit, July 18-25, 6 cases, 3 deaths; Grand Rapids, July 18-25, 1 case; Port Huron, July 18-25, 2 cases.
Mississippi: Natchez, July 11-18, 1 case.
Missouri: St. Louis, July 18-25, 2 cases.
New Hampshire: Manchester, July 18-25, 5 cases.
New York: Rochester, July 14-21, 1 case.
Ohio: Cincinnati, July 17-24, 3 cases; Dayton, July 18-25, 5 cases; Toledo, July 18-25, 2 cases.
Pennsylvania: Norristown, July 18-25, 3 cases, imported from Philadelphia; Pittsburg, July 18-25, 14 cases, 6 deaths; Scranton, July 18-25, 2 cases, 1 death.
South Carolina: Charleston, July 18-25, 1 case; Greenville, July 11-18, 4 cases.
Utah: Salt Lake City, July 18-25, 2 cases.
Washington: Tacoma, July 13-20, 1 case.

SMALLPOX—FOREIGN.

Argentina: Buenos Ayres, May 1-31, 11 deaths.
Austria: Prague, July 4-11, 5 cases.
Belgium: Antwerp, July 4-11, 3 cases, 3 deaths; Brussels, July 4-11, 3 deaths.
Brazil: Rio de Janeiro, June 14-28, 12 deaths.
China: Hongkong, May 31-June 13, 3 cases, 1 death.
Colombia: Bocas del Toro, July 7-14, 5 cases, 1 death.
France: Paris, June 27-July 4, 1 death.
Great Britain: Dublin, July 4-11, 5 cases; Dundee, July 6-13, 3 cases; Edinburgh, July 4-11, 1 case; Leeds, July 11-18, 6 cases; Liverpool, to July 18, 13 cases, 3 deaths; London, June 20-July 11, 42 cases; Manchester, July 4-11, 2 cases; Newcastle-on-Tyne, July 4-11, 1 case; Nottingham, July 4-11, 10 cases; Sheffield, July 11-18, 1 case.
Japan: Kobo, June 13-20, 1 death; Nagasaki, June 11-20, 1 case.
Mexico: City of Mexico, July 5-19, 31 cases, 25 deaths; Tampico, July 11-18, 2 cases; Vera Cruz, July 4-11, 1 case, imported.
Russia: Moscow, June 27-July 4, 5 cases, 4 deaths.
Turkey: Constantinople, July 5-12, 2 deaths.
Uruguay: Montevideo, May 31-June 20, 4 cases.

YELLOW FEVER.

Brazil: Rio de Janeiro, June 14-23, 4 deaths.
Costa Rica: Limon, July 8-16, 2 cases, 1 death.
Mexico: Altamira, July 14, present; Motzorongo, July 13, present; Progreso, July 12-19, 3 cases, 1 death; Tampico, July 11-18, 45 deaths; Tierra Blanca, July 13, present; Vera Cruz, July 11-18, 43 cases, 13 deaths; Zongolica, July 13, 5 cases.

CHOLERA.

China: Amoy, July 22, present; Hongkong, June 6-13, 1 death.
India: Calcutta, June 20-27, 30 deaths.
Straits Settlements: Singapore, June 6-13, 8 cases.
Turkey in Asia: Catana, May 24-June 6, 10 deaths; Damascus, June 6-20, 6 deaths in province; Luma, June 2, 2 deaths; Zibdani, May 31, 1 death.

PLAGUE—UNITED STATES.

California: San Francisco, June 15, 1 death.

PLAGUE—FOREIGN.

Africa: Cape Colony, May 31-June 6, 15 cases, 4 deaths; Natal, May 16-23, 2 cases.
Australia: Sydney, June 13, 1 case.
Brazil: Rio de Janeiro, June 14-20, 5 deaths.
China: Hongkong, May 31-June 13, 256 cases, 172 deaths.
Egypt: Alexandria, June 20-27, 5 cases, 4 deaths; Port Said, June 20-27, 2 cases, 1 death; other localities, June 20-27, 2 deaths.
India: Calcutta, June 20-27, 14 deaths; Karachi, June 14-28, 14 cases, 11 deaths.
New Caledonia: July 26, present.